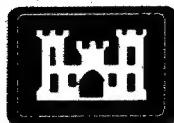


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**U.S. Army Corps
of Engineers**
New Orleans District

HISTORIC PROPERTIES MANAGEMENT PLAN FOR THE ATCHAFALAYA BASIN FLOODWAY SYSTEM PROJECT, SOUTH LOUISIANA

Final Report

September 2004

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SOUTH LOUISIANA**

Final Report

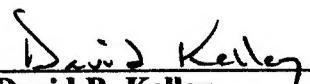
by

David B. Kelley

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Baton Rouge, Louisiana 70802**


**David B. Kelley
Principal Investigator**

ABSTRACT

This document presents a Historic Properties Management Plan (HPMP) for the Atchafalaya Basin Floodway System (ABFS) Project. The primary goal of the plan is to provide the outline of a program for compliance with historic preservation requirements on lands managed by the U.S. Army Corps of Engineers in the Atchafalaya Basin. The project area consists of approximately 595,000 acres lying between the East and West Atchafalaya Basin Protection Levees and from U.S. Highway 190 to Morgan City, Louisiana. Its authorized features include 1) the purchase of 50,000 acres for public access; 2) the acquisition of flowage control easements over 59,000 acres of private lands; 3) the acquisition of developmental control and environmental protection easements for 338,000 acres; 4) the purchase of 1500 acres for recreational development by the non-federal sponsor of the project; and 5) the development of two or more water management units.

The statutory and regulatory bases of the Historic Properties Management Plan are summarized, and previous cultural resources research in the Atchafalaya Basin is reviewed. Models of the distribution of terrestrial sites and shipwrecks, derived from this research, are briefly discussed. The impacts of past flood control and navigation projects in the Atchafalaya Basin on cultural resources are summarized and the potential impacts of the various features of the ABFS Project are discussed. Finally, recommendations are offered for prioritizing future cultural resources investigations and for compliance procedures for specific project activities.

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CHAPTER 1

INTRODUCTION

Purpose and Authority

This Historic Properties Management Plan (HPMP), prepared for the U.S. Army Corps of Engineers' Atchafalaya Basin Floodway System (ABFS) Project, Louisiana, presents a program to provide compliance with historic preservation requirements on lands managed by the Corps of Engineers in the Atchafalaya Basin. Under the National Historic Preservation Act of 1966, as amended 1992 (NHPA), and the National Environmental Policy Act of 1969 (NEPA), federal agencies are required to consider the effects of their actions on historic properties or cultural resources. Specifically, Section 110(a)(2) of NHPA requires agencies to inventory the cultural resources under their control and to manage them "in a way that considers the preservation of their historic, archeological, architectural, and cultural values." The COE is also obligated under Engineer Regulation ER 1130-2-540 (Project Operations – Environmental Stewardship Operations and Maintenance Policies) to "develop a HPMP for each operational project under its jurisdiction and control and incorporate it into the project Operational Management Plan (OMP)" (EP 1130-2-540, 6-8f). This HPMP follows the format presented in Engineer Pamphlet EP 1130-2-540, and is intended to be a working document used by COE personnel in conjunction with the OMP for the project. The OMP is to be updated annually, and, based on those revisions, the HPMP should be periodically updated as well.

The Atchafalaya Basin Floodway System Project

The ABFS Project is intended to maintain or enhance the productivity of the natural habitats of the Atchafalaya Basin and to preserve their aesthetic values for the public user through a combination of land acquisition, environmental protection, flowage control, and developmental control. The project area consists of approximately 595,000 acres lying between the East and West Atchafalaya Basin Protection Levees and from U.S. Highway 190 to Morgan City, Louisiana (Figure 1-1). Presently, the authorized features of the project include 1) the purchase of 50,000 acres for public access; 2) the acquisition of flowage control easements over 59,000 acres of private lands; 3) the acquisition of developmental control and environmental protection easements for 338,000 acres; 4) the purchase of 1500 acres for recreational development by the non-federal sponsor of the project; and 5) the development of two or more water management units.

Report Organization

The remainder of this report is organized in the following fashion. Chapter 2 begins with an overview of the environment of the Atchafalaya Basin emphasizing its dynamic nature and the constraints this has placed on human habitation. The chapter also discusses previous archaeological research in the region and summarizes our current knowledge of prehistoric and historic cultural development there. Information on the known cultural resources of the project area is presented in tabular form, and two locational models are discussed, one for terrestrial archaeological sites and the other for shipwrecks. Chapter 3 summarizes information on

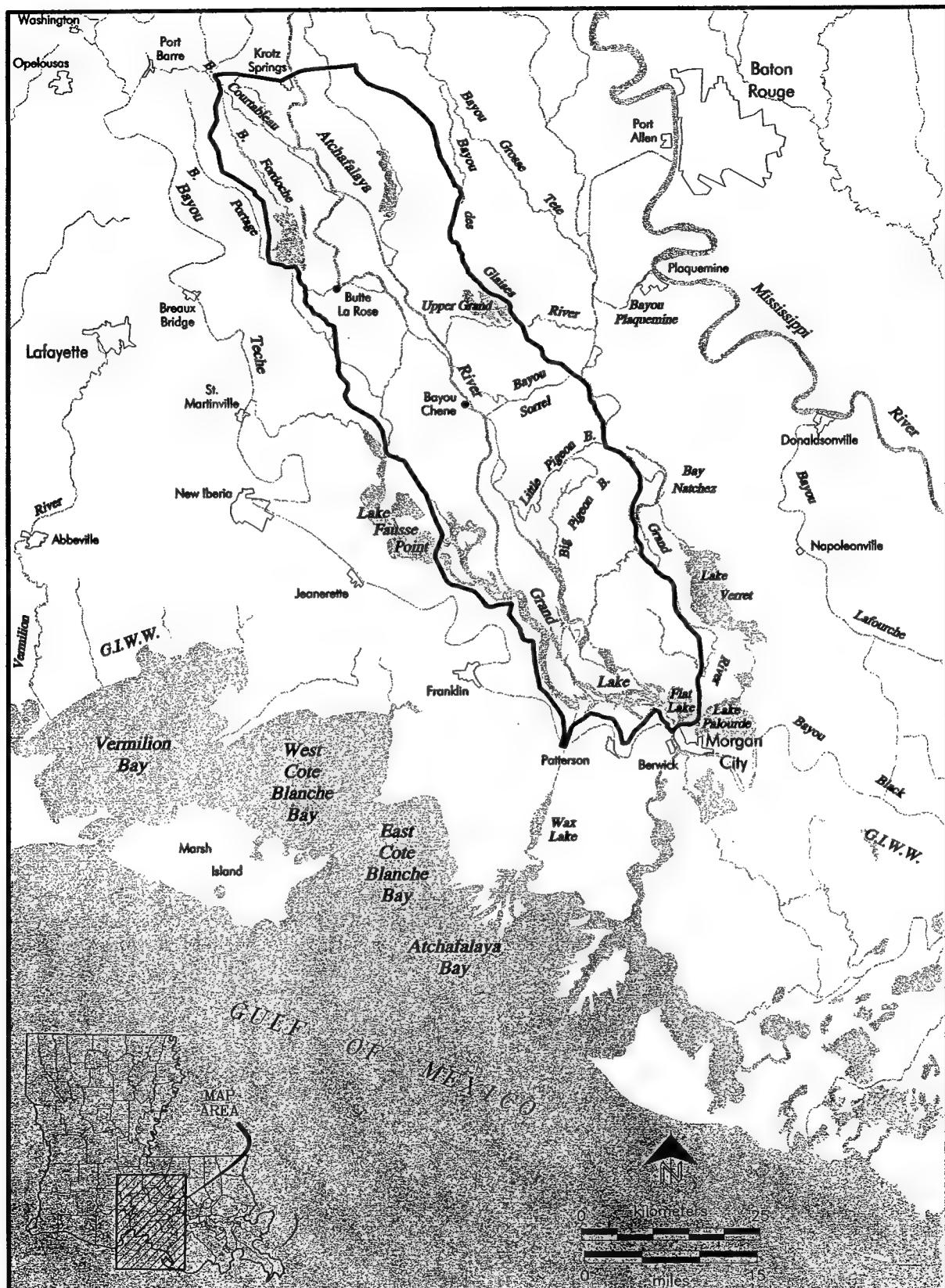


Figure 1-1. Map of the Atchafalaya Basin Floodway System Project area.

previous impacts to cultural resources from the Atchafalaya Basin Floodway and discusses the potential impacts of the various elements of the present project. Finally, Chapter 4 presents recommendations for insuring compliance with historic preservation laws and regulations, including priorities for future research and compliance procedures for project activities. The HPMP also includes a set of large-scale maps of the project area produced in a Geographic Information System (GIS). The maps utilize the 1/24,000 USGS digital raster graphic (DRG) topographic maps as a base and include information on archaeological sites, shipwrecks, previous cultural resources surveys and areas considered to have a high probability for the occurrence of cultural resources. The GIS, which is also being provided to the New Orleans District in digital form, also includes information on the geomorphology of the near-surface deposits of the project area, data derived from historic maps of the area, and the location of revetments and previous dredging and disposal areas, all of which can be displayed on the same base, but for clarity's sake was not presented on the printed maps.

CHAPTER 2

THE PREHISTORY AND HISTORY OF THE ATCHAFALAYA BASIN

Environmental Setting

The Atchafalaya Basin is a physiographic lowland between active and abandoned meander belts of the Mississippi River. To the east are the present course of the Mississippi and the relict Bayou Lafourche course. To the west is Bayou Teche, another relict course of the Mississippi River, that was occupied by the Mississippi from about 5800 to 3900 years BP (before present) and subsequently by the Red River. Numerous studies discuss and describe the geology of the basin (Fisk 1952; Fisk and McFarlan 1955; Frazier 1967; Krinitzsky and Smith 1969; Saucier 1994), with Smith et al. (1986) providing the most recent and complete summary.

The Atchafalaya Basin extends from above Krotz Springs, Louisiana, in the north to Morgan City, Louisiana, in the south and consists primarily of freshwater swamps and numerous shallow lakes. Land surfaces in the region are flat and elevations range from 0 to about 50 ft (0 to 15 m), though most are generally less than 15 ft (5 m). The surface deposits of the Atchafalaya Basin are underlain by thick strata of sediments laid down by fluvial processes during the past 8,000 to 10,000 years. The upper deposits consist predominantly of sandy clay, silty clay, clay, and peat facies in backswamp, lacustrine, and lacustrine delta environments (Krinitzsky 1970; Krinitzsky and Smith 1969). The stratigraphic and lithologic evidence reveals that the basin was occupied by shallow lakes and backswamps throughout most of the Holocene (Smith et al. 1986:42).

Three major events during the past 2,000 years have been largely responsible for the present physiography of the Atchafalaya Basin, although significant changes have occurred within the past 100 years (Smith et al. 1986). Initially, the area now occupied by the Atchafalaya Basin was an estuarine interdistributary basin with seawater exchange through a southern opening between present-day Morgan City and Houma. Sometime between 1500 and 2000 years B.P. this tidal pass(es) closed with the progradation of a deltaic distributary into the area. Known as the Little Bayou Black-Bayou du Large distributary network, this system extended to the area of the natural levees of Bayou Teche, the relict Mississippi River course which bounded the basin on the west. As a result, an extensive system of shallow lakes was formed in the southern half of the now-impounded estuarine basin, creating subaqueous centers of deposition. During its early history, this system of lakes was quite

expansive. At some point in time, the impounded water topped and cut through the natural levees of the Teche course at the locations of the present communities of Patterson and Morgan City. The opening at Morgan City remains today as the outlet for the Atchafalaya River.

Significantly different natural processes were active in the northern part of the basin. Along the active river channels periodic overbank flow and crevassing resulted in the transmission of suspended and bed material into the interdistributary basin, gradually raising the elevations of the land surface. Natural levees, channel fill, and backswamps dominated the landscape.

The basin remained as two distinct zones until about 500 years ago, when the second major event in the physiographic evolution of the Atchafalaya Basin occurred. At this time, the Mississippi River migrated to a new course at Turnbull Island, about 50 mi (80 km) north of Baton Rouge. In response to the actions of the Mississippi, the position of the mouth of the Red River changed and an embryonic Atchafalaya River was created. Increasing quantities of water and sediment flowed from the Mississippi into the Atchafalaya, creating a major distributary. The greater amounts of sediment-laden water resulted in infilling and the creation of more extensive areas of dry land in the northern half of the old estuary, such that the original two zones began to coalesce.

The final factor contributing to the formation of the modern Atchafalaya Basin consisted of a series of human activities undertaken since the third decade of the nineteenth century. These various activities have been directed, primarily, at improving the navigability of various streams in the Atchafalaya Basin and at flood control. These included the clearing of a large log raft at the head of the Atchafalaya River and dredging in the upper parts of the river beginning in 1839 to accommodate commercial navigation; the establishment of the basin as a flood control project in 1928, and the subsequent construction of guide levees and water control and navigation structures; the construction of levees; dredging; and, in 1963, construction of the Old River Control Structure. This structure has served to regulate flow into the basin at 30 percent of the Mississippi River discharge, and, also, is intended to prevent capture of the Mississippi River flow down the Atchafalaya Basin.

As a result of these human-induced changes, sedimentation within the restricted, artificial flood basin has increased dramatically. Natural levees and swamps have been covered by several feet of sands, silts, and clays, and subaqueous environments filled by prograding lake deltas and the creation of islands and bars. This massive influx of material has taken place during a very short period of time. Smith et al. (1986) estimated that 85 percent of the lake system in the southern part of the basin has filled since 1900.

Once the sediment trap provided by the lakes in the Atchafalaya Basin had become largely filled, a locus of sedimentation and active delta formation developed in Atchafalaya Bay. By the early 1950s, a subaqueous delta began forming in Atchafalaya Bay at the mouths of the Lower Atchafalaya River and at Wax Lake Outlet, an artificial channel located about 16 mi (25 km) west of Morgan City (Saucier 1994). A subaerial lobe began to form in 1973 and has expanded rapidly due to several major flood events on the Mississippi River,

which put large amounts of sediment into the Atchafalaya River system. Saucier (1994:285) notes that the Atchafalaya Delta represents the only geomorphic event of its type and scale to occur in the Mississippi Valley area in recent times and, as a result, it has been studied in detail. Because of the development of the Atchafalaya Delta and the large amounts of sediment being dumped into Atchafalaya Bay, the area immediately around the bay is the only location on the Louisiana coast currently experiencing an expansion of intertidal marshes. However, as Saucier notes (1994:285), delta formation will continue to take place in deeper water and there will be a decrease in the sediment being put into the bay because Corps of Engineers' efforts to channelize the Atchafalaya River have ended and the stream has begun to stabilize.

Previous Archaeological Research

Aside from various nineteenth century travelers' descriptions of sites, the earliest archaeological research in the project area was Clarence B. Moore's expedition through the Atchafalaya Basin during the winter and spring of 1912-1913 (Moore 1913:9-21). Moore was primarily interested in collecting specimens of artifacts for display, and for this reason focused his efforts on mounds and burials. His report is important primarily because it provides the only descriptions of some of the sites in this area prior to their disturbance by development.

Moore's research was not followed up until 1926 when Henry B. Collins of the U.S. National Museum spent almost three months examining sites in coastal Louisiana. In the vicinity of the present project area Collins visited sites near Lake Palourde and Bayou l'Ours, and carried out limited excavations at the Gibson Mounds (16TR5) (Collins 1927:200-202). Collins' research was not as well reported as Moore's, but his interests extended beyond artifacts to culture history. He noted the similarity between the ceramics of the Louisiana coast and those of the Florida Gulf Coast, and speculated on the tribal identity of the groups associated with the mound sites of southern Louisiana (Collins 1927:206).

Another decade passed before the next archaeological research in the project area, a survey of sites in Iberville Parish and portions of adjacent parishes by Fred B. Kniffen (1938), a cultural geographer at Louisiana State University. Kniffen visited and made collections from over 50 sites. Although his data were limited to surface collections, Kniffen's research represents a significant advance over the previous investigations in two respects. First, he drew on James A. Ford's (1936) recently completed work on developing a ceramic chronology for the Lower Mississippi Valley, and was therefore able to relate his sites to Ford's three period sequence. Second, Kniffen's background as a geographer allowed him to recognize that the archaeological sites could also provide information on the age of the alluvial landforms with which they were associated and on past environmental conditions in the area. Along with Kniffen's earlier study of sites in Plaquemines and St. Bernard parishes (Kniffen 1936) this represents the beginning of the close association between archaeology and geography in southern Louisiana.

Over 10 years elapsed before the next archaeological research in the Atchafalaya Basin, an extensive survey of sites throughout the Louisiana coast by one of Kniffen's

students, William G. McIntire. McIntire (1958:18) visited about 500 sites in the coastal zone, most of them probably reported by local informants. Although he conducted no sizeable excavations, he used a hand auger to take borings at each site in order to obtain information on the composition and depth of the cultural deposits and the type of landform on which they were resting. Like Kniffen, McIntire attempted to use the archaeological data to provide a chronology for deltaic development and to help reconstruct past environments. In the vicinity of the present project area he visited about 30 sites, and presented ceramic data from 10 of these. Many of these sites were ones initially recorded by Kniffen, and regarding these McIntire noted:

Many of the sites which he [Kniffen] investigated and reported have long since been destroyed by road-metal contractors, washed into bayous and lakes by erosion, or buried beneath recent sediments. The latter is particularly true in Iberville and Ascension parishes [McIntire 1958:7].

Another gap of over 10 years separates McIntire's study from the next archaeological investigations in the Atchafalaya Basin, James W. Springer's (1973) excavations at the Grand Bayou or Bruly St. Martin site (16IV6). Springer's investigations revealed a series of occupations beginning late in the Baytown period and continuing into the Coles Creek period. He argued that the initial occupations represented seasonal camps established while the crevasse channel was active (Springer 1973:118). After the channel was abandoned a more permanent occupation, including a platform mound, developed. Springer's excavations also produced a large quantity of faunal remains, which indicated a heavy reliance on fish throughout the site's history (Springer 1980).

Within a few years of Springer's work the quantity of archaeological research in the Atchafalaya Basin increased significantly as a result of the implementation of federal historic preservation laws (Table 2-1). Two of the first such projects to be carried out in the vicinity of the present study area were a survey of proposed Corps of Engineers construction areas in the Atchafalaya Basin by Louisiana State University (Neuman and Servello 1976) and a survey of the Gulf Intracoastal Waterway by Coastal Environments, Inc. (Gagliano et al. 1975). Both of these surveys covered very large areas and by current standards would not be considered intensive. And in both cases the fieldwork focused on those landforms which the research by Kniffen and McIntire had shown to be high probability areas for prehistoric sites. The LSU survey, which began in the Fall of 1974 and was completed in the Spring of 1976, located 77 new sites and revisited 23 previously recorded ones. Another 33 sites could not be relocated. The CEI survey, carried out in 1975, examined over 70 sites exposed along the waterway or in spoil disposal areas.

The next research conducted in the vicinity of the present study area consisted of three studies carried out in the late 1970s. One of these was an intensive survey by CEI of the proposed relocation route of U.S. 90 along the southern border of the present study area (Weinstein et al. 1978). Previously recorded sites within approximately 1.5 km of the route were also revisited. Two sites, Thibodaux (16AS35) and Bayou Ramos I (16SMY133), were tested since they were located either within or immediately adjacent to the highway ROW. A third site, Gibson Mounds (16TR5), was examined superficially after it was discovered that

Table 2-1. Previous Cultural Resources Reports on the Atchafalaya Basin Floodway System Project Area.

Date	Report No.	Authors	Title	Description	Results and Recommendations
1975	22-106	Sherwood M. Gagliano, Richard A. Weinstein and Eileen K. Burden	Archaeological Investigations along the Gulf Intracoastal Waterway: Coastal Louisiana Area	Inventory of archaeological sites in the Atchafalaya Basin	Identified 200 archaeological sites in the vicinity of the waterway
1976	22-110	Robert W. Neuman and A. Frank Servello	Atchafalaya Basin Archaeological Survey	Phase 1 survey	Relocated 23 previously recorded sites, 77 new sites recorded
1976	22-147	Sherwood M. Gagliano	An Archaeological Survey of Drainage District #5, Wyandone and St. Lucieville Subdivisions	Phase 1 survey	No significant cultural resources found.
1977	22-355	Jon L. Gibson	Cultural Resources Survey of Proposed Borrow Areas: West Atchafalaya Basin Protection Levee, Levee Enforcement and Berms, Item W-96-0-A, Gap Closures STA. 4551+00 to STA. 4687+00 (Not Continuous), St. Mary Parish, Louisiana	Phase 1 survey including surface survey and literature review	No cultural resources found.
1978	22-398	Jon L. Gibson	Archaeological Survey of the Lower Atchafalaya Region, South Central Louisiana	Phase 1 survey	Several sites considered significant.
1978	22-304	Jon L. Gibson	Archaeological Examination of Shaffer Oak Ridge (16SMY50), St. Mary Parish, Louisiana: Evaluation of Impact	Phase 1 survey	Few standing structures and one previously recorded site not eligible
1978	22-366	William G. McIntire	The Texas-Louisiana Ethylene (TLP) Project	Phase 1 survey including subsurface testing	One new site found and one existing site relocated within the project area.
1980	22-617	Robert J. Floyd	Cultural Resources Survey Proposed No. 1 Well State Lease 8173 LMNO-SP (Grand Lake) 135 St. Martin Parish, Louisiana for Quinamax Production Company	Phase 1 survey	Pedestrian survey impossible due to high water; background research indicated low probability.
1980	22-639	William G. McIntire	Cultural Resource Survey for Planning Area Number 3 Iberville Parish, Louisiana	Phase 1 survey including subsurface testing	Recommended an intensive field study prior to final approval because of the close proximity of sites 16IV3, IV4, IV13 and IV 27. No new cultural resources found.
1980	22-667	Southern Archaeological Research, Inc.	Downstream Processing Facilities at Hill Petroleum Company	Phase 2 investigations	No new sites or previously recorded sites within the project area. No eligible standing structures found.
1981	22-1021	William G. McIntire	Cultural Resource Survey Louisiana Section of Proposed Pipeline Corridor from Weeks Island to Mississippi Border	Phase 1 survey including subsurface testing	Two standing structures located; neither is eligible
1982	22-775	Hearfield, Price & Greene, Inc.	A Cultural Resources Survey of Portions of the Proposed Krotz Spring Loop in the Vicinity of Krotz Springs, St. Landry Parish, Louisiana	Phase 1 survey including subsurface testing	Two standing structures located; neither is eligible
1982	22-619	Jon L. Gibson	Archaeology and Ethnology on the Edges of the Atchafalaya Basin, South Central Louisiana	Phase 1 survey including subsurface testing	11 sites recommended for mitigation.
1984	22-963	R. Christopher Goodwin and Galloway W. Selby	The Historic Archeology of the Morgan City Floodwall Boat	Archaeological testing for significance	Unknown
1984	22-1528	Michael E. Scott	Cultural Resources Investigations of Reported Indian Mounds at W/EPJ Item W-610, St. Martin Parish, Louisiana	Investigations of a reported mound site including shovel testing	Determined that the mound was actually a remnant levee
1985	22-1019	Susan DeFrance	A Cultural Resource Survey of a Proposed Bulkhead Construction Area on Bayou Boeuf, St. Mary Parish, Louisiana	Phase 1 survey of the Greenwood Cemetery site (16SMY19) including surface collection and 3 shovel tests	Recommended as eligible for the NRHP
1985	22-1050	R. Christopher Goodwin et. al	Cultural Resources Survey of the Morgan City and Vicinity Hurricane Protection Project	Phase 1 survey including subsurface testing	No new sites recorded. 16SMY1 was relocated in the project area but is not significant

(continued)

Table 2-1. Concluded.

Date	Report No.	Authors	Title	Description	Results and Recommendations
1985	22-1017	Michael E. Stout	Cultural Resources Survey of the Cowell Bayou Levee Setback St. Martin Parish, Louisiana	Phase 1 survey including subsurface testing	No cultural resources found.
1986	22-1122	R. Christopher Goodwin & Kenneth R. Jones	Cultural Resources Survey of the Wax Lake Outlet Control Weir, Atchafalaya Basin, Louisiana, Project	Phase 1 survey including test excavations at 16SM37	No new sites recorded. 16SM37 is not significant and will not be impacted.
1987	22-1217	Michele Desbordes	Cultural Resources Survey Ramos Bayou Bridge Route U.S. 90 St. Mary Parish	Phase 1 survey, no subsurface testing	Previously recorded site is out of construction area and will not be affected.
1987	22-1192	Kathy Manning et.al.	Cultural Resources Survey of East Atchafalaya Basin Protection Levee Item E-44, Iberville Parish, Louisiana	Phase 1 survey including subsurface testing	No cultural resources found. Five previously recorded sites were investigated. Only two could be relocated and these were outside the project area.
1989	22-1536	Charles E. Pearson and Allen R. Satus, Jr.	Remote Sensing Survey and Evaluation of the American Pass and Blue Point Canal Weir, Atchafalaya Channel Training Project, Louisiana	Remote sensing and exploratory diving at Blue Point Canal and American Pass	34 anomalies were found. Two were identifiable, but not significant. Three anomalies in the American Pass area were investigated, but the sources of these anomalies were not found.
1990	22-1466	Allen R. Satus, Jr., Rodney E. Emler, and Susan Wurzburg	Cultural Resources Investigations, Cross Basin Channel Realignment, Atchafalaya Basin, Louisiana	Phase 1 survey including remote sensing, pedestrian survey with magnetometer and auger testing	In the Old Atchafalaya Area no cultural remains were found. Three anomalies were found in the East Freshwater Channel Area, but will not be impacted by construction. No significant cultural remains were found in the West Access Channel Area, however, monitoring is recommended for one anomaly.
1991	22-1482	Charles E. Pearson and Allen R. Satus, Jr.	Remote Sensing Survey of the Atchafalaya Basin Main Channel, Atchafalaya Channel Training Project, St. Martin and Mary Parishes, Louisiana	Remote sensing and exploratory diving at several locations along the Atchafalaya River Main Channel	A large number of anomalies were found and diving on a few of them revealed that they were modern debris. Over 20 watercraft were found in Bayou Shaffer area. Recommended that the area along the bank of Bayou Shaffer at the landing near Avoca Plantation be examined by pedestrian survey.
1994	22-1745	Hakon Viglander and Benjamin Maygarden	Phase 1 Cultural Resources Inventory of Public Access Lands in the Atchafalaya Basin, Vicinity of the Sherburne Wildlife Management Area, Pointe Coupee, St. Martin and Iberville Parishes, Louisiana	Historical overview and intensive survey within two land parcels	No new sites recorded. 16V156 was revisited.
1995	22-1906	Lawrence G. Samford et. al.	Cultural Resources Survey and Testing of Sanitary Sewer System Improvements and Rehabilitation, St. Martin Parish	Phase 1 survey including subsurface testing	Confirmed McIntire's 1978 findings. No new sites found.
1995	22-1926	Alan S. Skinner, Brenda B. Whorton and Lance K. Task	A Cultural Resources Survey from Sorento, Louisiana to Mant Belview, Texas	Remote sensing survey of 5 blocks in Atchafalaya Bay	100 anomalies were identified in the first survey and 307 were identified in the resurvey
1998	22-2119	John L. Seidel, David S. Robinson, and Adam Kane	Marine Remote Sensing Survey of the Atchafalaya Ocean Dredged Material Disposal Site, Louisiana	Mapping, documentation and general reconnaissance of the Bayou Jean Louis cemetery, Seven additional cemeteries mapped, only two had above ground remains	Preservation in place was recommended. Five additional areas of severe erosion should be monitored.
1999	22-2110	Benjamin Maygarden, et.al.	National Register Evaluation of the Bayou Jean Louis Cemetery (16SM89), Atchafalaya Basin Project, St. Martin Parish, Louisiana	Analysis and remote sensing in the area of the USS <i>Kinsman</i>	Located 17 anomalies, 7 of which may be associated with the USS <i>Kinsman</i> . The <i>Kinsman</i> was evaluated as eligible.
1999	22-2250	Allen Satus, Jr., Benjamin Maygarden and Roger T. Saucier	Phase 1 Cultural Resources Survey and Archaeological Inventory of the Bayou Sorrel Lock Replacement Project, Iberville Parish, Louisiana	Phase 1 survey including subsurface testing	Located 4 standing structures and one previously recorded site which are not eligible
2000	22-2330	Kari Krause et.al.	Evaluation and Analysis of Anomalies Possibly Associated with the USS Col. Kinsman Atchafalaya River, Louisiana	Examination of seven anomalies identified previously by Earth Search Inc.	The USS <i>Kinsman</i> was not located and most of the sources of the magnetic anomalies were not found.

one of the three mounds at the site had been recently cut in half. The survey crew was allowed to clear and record a profile of the mound remnant and collect surface artifacts from the site.

The second of these studies was a testing program conducted by New World Research, Inc., at 33 previously recorded archaeological sites located along proposed sewerage line routes in Terrebonne and Lafourche parishes (Altschul 1978). Only a few of the sites examined are located in the present project area, the remainder lie south and east of it. In addition to the data provided on individual sites, Altschul (1978:177-189) proposed a model of Plaquemine settlement for the region and attempted to test it by seriating the ceramics from the test excavations.

The last of these three studies was a survey of proposed channel enlargement areas along the Lower Atchafalaya River and several bayous south of Morgan City by Jon Gibson of the University of Southwestern Louisiana (Gibson 1978b). Forty-three sites were located or revisited. In addition to providing information on specific sites, Gibson (1978b:228-234) examined the distribution of sites in relation to a series of environmental variables using chi-square tests.

Less than two years after completing the above project Gibson began an extensive survey of proposed construction areas along the Atchafalaya Basin Protection Levees (Gibson 1982). This survey examined a 406 m wide corridor that extended about 385 km from the vicinity of Moreauville in Avoyelles Parish south to below Morgan City. Despite the size of the area only 33 sites were recorded. In addition to the archaeological survey, an ethnographic survey was conducted in communities located near the project corridor.

In 1985 R. Christopher Goodwin and Associates, Inc., conducted a survey in the southwestern corner of the present study area in relation to the proposed Morgan City and Vicinity Hurricane Protection project (Goodwin et al. 1985). No new sites were located, but test excavations were carried out at the Goat Island site (16SMY1). The testing produced evidence of a Coles Creek occupation that was radiocarbon dated to ca. A.D. 1100.

The following year Dennis Jones and Malcolm Shuman of the Museum of Geoscience at Louisiana State University began a project to revisit and map all of the known mound sites in Ascension, Iberville, Pointe Coupee, St. James and West Baton Rouge parishes (Jones and Shuman 1987). Several sites located in the present project area were included in their report.

In late 1986 CEI began a large-scale survey of areas that would be impacted by the Terrebonne Marsh Backwater flood-protection project (Weinstein and Kelley 1992). The areas examined included proposed flood-barrier locations, as well as a sample survey of the roughly 300,000 acres of marsh that would be impacted by the project. Ten new sites and 22 previously recorded ones were encountered during the barrier surveys. The sample survey, which was conducted by a combination of boat and pedestrian transects, examined 3000 acres and recorded 18 sites in the survey areas and revisited or located another 20 sites outside of these areas. A model of environmental change developed by the Center for

Wetland Resources at Louisiana State University was then used to develop predictions of the project's impacts to sites in the area. The study also attempted to model the geomorphic history of the area from about 3000 B.P. to the present and to consider settlement changes in relation to that model.

Since the completion of the Terrebonne Marsh project a number of small surveys have been conducted in the vicinity of the present study area, but most of these have produced little in the way of substantive results. In 1987 R. Christopher Goodwin and Associates, Inc., surveyed several proposed borrow areas associated with Atchafalaya Basin Protection Levee Item E-44 (Manning et al. 1987). No sites were found in the areas surveyed, but the Bayou Sorrel Mound (16IV4) was revisited, and a contour map of the mound was made. In 1989 Louisiana State University surveyed a proposed borrow area on Belle River in St. Martin Parish (Whitmer et al. 1990). Two previously recorded sites, 16SM42 and 16SM43, were examined and determined to be not significant. In 1994 Earth Search, Inc., surveyed three borrow areas associated with the East Atchafalaya Basin Protection Levee (McMakin et al. 1994). The survey yielded only a single historic site, 16IV23, but in conjunction with the project Heinrich mapped the surface geomorphology of much of the present study area and used the available archaeological data to attempt to date the major geomorphic features.

Marine remote sensing surveys within the study area began relatively recently. The first of these was conducted in the late 1980s, and to date only six have been completed (see Table 2-1). Most of these were conducted in relation to proposed Corps of Engineers' dredging projects. The surveys have generally recorded large numbers of anomalies, but very few of these have proven to be associated with shipwrecks. One exception was a survey conducted along portions of Bayou Shaffer south of Morgan City (Pearson and Saltus 1991). Over 20 partial or complete watercraft were recorded in this area, ranging in size from pirogues and skiffs to a possible sailing sloop and a large barge. Some of these were located with the remote sensing equipment and others through careful examination of the stream banks. Although the Bayou Shaffer area differs in some respects from areas within the Floodway, the number and diversity of watercraft found in this area should be an indicator of the types of shipwrecks that may be present in the study area.

In summary, previous archaeological research in the Atchafalaya Basin has been sporadic and limited in scope due in large measure to the difficulty of travel there. The earliest studies focused on prehistoric mound sites or large shell middens reported by local informants. These provided data on specific sites, but little indication of whether the sites were representative of settlements in the region or how common they were. Systematic surveys did not begin until the advent of Federally-mandated cultural resource management studies. Often these studies have been limited to small project areas, and produced little in the way of substantive results. In a few cases more extensive overviews have been attempted, but the amount of systematic survey work in the study area is still very small.

Regional Prehistory

Since the earliest landforms within the study area are related to the Teche-Mississippi course and its distributaries (ca. 4000 to 1000 B.C.), the following discussion will begin with the earliest culture period in existence during that time: the Middle Archaic. It is recognized that earlier Paleo-Indian and Early Archaic components are known from the coastal zone (see, for instance, Coastal Environments, Inc. 1977; Gagliano 1967, 1970; Weinstein et al. 1979), but these generally occur in areas where relict Pleistocene-age features are being exposed by shoreline transgression or on uplifted salt dome islands. Such features are deeply buried within the present study area and are not expected to be encountered in anything but deep borings.

Middle Archaic Period, 5000-3000 B.C.

The Middle Archaic period is characterized by widespread regional differentiation of cultures, and a number of developments in ground stone technology. The latter includes grooved axes, atlatl weights and pendants, as well as more extensive use of grinding stones, which first appeared in the previous period. This period also roughly corresponds with the Hypsithermal Interval that brought increased warmth and aridity to areas bordering the Great Plains (Wood and McMillan 1976). The impact of this climatic shift on other portions of the Southeast is not well known at present. Smith (1986:22) has suggested that the intensive shellfish collecting evidenced at some riverine sites of this period represents a response to this change. Some researchers have also suggested that plant collecting increased in importance during this time (Stoltman 1978:714-715), but Smith (1986:18) argues that there is presently no evidence for an increase in plant processing equipment during this period.

Recent research by Joe Saunders and others in Louisiana indicates that mound construction began during this time in portions of the Lower Mississippi Valley (Saunders 1994; Saunders et al. 1994). Components dating to this period can be found at several mound sites in northern Louisiana, and at a handful of southeastern Louisiana mound sites including Monte Sano (16EBR17), LSU Mounds (16EBR6), Banana Bayou (16IB24), and Hornsby (16SH21) (Saunders 1994; Saunders et al. 1994). The function of these mounds among what are thought to have been hunting and gathering societies is unclear; although one site, Monte Sano, contained what may be cremation burials (Saunders 1994:121).

In coastal Louisiana, very little evidence of the Middle Archaic period has been recognized. What evidence there is comes generally from the Florida Parishes north of Lake Pontchartrain and the Prairie Terrace region of southwestern Louisiana. Three regional phases have been identified, Monte Sano, Amite River, and Banana Bayou, but all are somewhat removed from the present project area. Perhaps components of the Banana Bayou phase, named for the small conical mound situated on the flanks of Avery Island, and which produced material and radiocarbon dates suggestive of a transitional Middle to Late Archaic age (Gagliano 1967; Brown and Lambert-Brown 1978), will eventually be found in the area.

Late Archaic Period, 3000-1500 B.C.

Research elsewhere in eastern North America suggests that the Late Archaic period was a time of marked population increases and the beginning of extensive trade networks. The evidence for the former is seen in the appearance of large habitation sites such as Indian Knoll, Kentucky (Webb 1946), while the latter is reflected in the exotic raw materials which occur at some sites. Plant cultivation involving a locally domesticated squash and seed plants such as sumpweed and chenopod may also have begun during this period (Smith 1989). The tradition of mound building which began in the previous period in portions of the Lower Mississippi Valley apparently continued, although most of the available radiocarbon dates from these features predate this period.

In coastal Louisiana, three geographically separated phases have been identified, but none of these are located in the vicinity of the present project area. The Pearl River phase, based on material from the Cedarland site (22HA506) in Hancock County, Mississippi (Gagliano and Webb 1970), is the only one of the three that is relatively well known. Copell is based on excavations into an apparent preceramic cemetery (16VM102) on Pecan Island (Collins 1941), while Bayou Blue is named for material from a site (16AL1) in Allen Parish (Coastal Environments, Inc. 1977; Gagliano et al. 1982; Weinstein et al. 1977, 1979).

Of particular importance to the present study are several Late Archaic sites that apparently are directly associated with Teche-Mississippi natural levees (Gagliano et al. 1978; Gibson 1990). These include sites 16SL16 and 16SL19, reported by Neuman and Servello (1976:24) during their Atchafalaya Basin survey. Their presence is almost certainly related to the Teche channel after the Mississippi had abandoned the course.

Poverty Point Period, 1500-500 B.C.

In much of eastern North America this time interval witnessed a transition from Archaic hunting and gathering cultures to Woodland cultures characterized by food production, pottery manufacture, and mound building (Stoltman 1978:715-717). Current interpretations suggest that these three features have different and possibly unrelated origins. There is increasing evidence of the cultivation of native seed plants and a locally domesticated squash by 1500 B.C. in the Midwestern United States (Smith 1989). Ceramics probably appeared somewhat earlier than this in the third millennium B.C. along the Atlantic Coast (Stoltman 1978:715), and as noted above, mound building had begun in the Lower Mississippi Valley prior to 3000 B.C.

In the Lower Mississippi Valley this transition is marked by the development of the distinctive Poverty Point culture. Among the material characteristics of this culture are baked clay balls or Poverty Point objects, microlith and lapidary industries, and earthworks (Webb 1977). Pottery is not abundant, but fiber-tempered and sand-tempered wares have been found at several sites. Subsistence data from the J.W. Copes site (16MA47) suggest a continuation of an Archaic pattern of intensive collecting of wild plants and animals, possibly supplemented by the cultivation of squash (Jackson 1986). The status of squash in the subsistence economy remains uncertain. Fritz and Kidder (1993:6) have questioned whether

the *Cucurbita pepo* seeds recovered from the J.W. Copes site are from domesticated plants or wild gourds.

Poverty Point period components in the vicinity of the present study area have been included in the Rabbit Island phase, proposed by Phillips (1970:875-876) on the basis of "a handful of scattered components of Poverty Point affiliation in the Teche-Mississippi region." The Rabbit Island site (16SMY8) is located about 30 km west of the mouth of the Atchafalaya River, at the distal end of the Bayou Sale distributary, a channel emanating from the Teche-Mississippi course (Smith et al. 1986:Pl. 38; Weinstein and Gagliano 1985:123). The component listed by Phillips at the Bayou Sorrel site is based on Moore's (1913) recovery of Poverty Point objects from them, and is apparently associated with channels of the Bayou Plaquemine distributary system (Heinrich 1994:8). Other sites with Poverty Point period components include Bois d'Arc #1 (16TR211) and Bois d'Arc #2 (16TR212), located on a possible Teche-Mississippi distributary south of the present study area (Weinstein and Kelley 1992:279-289).

Tchula Period, 500 B.C.-A.D. 1

This period in the Lower Mississippi Valley has often been characterized as a time of integration of food production, pottery manufacture, and mound building into a single cultural system. However, as discussed below, the evidence for food production during this period is equivocal. In the southern portion of the valley the Tchula period witnessed the appearance of an archaeological culture called Tchefuncte. Originally defined in southern Louisiana (Ford and Quimby 1945), Tchefuncte culture is now recognized to extend as far north as northern Mississippi, and as far west as northeast Texas. The diagnostic artifacts of this and most of the succeeding prehistoric cultures of the Lower Mississippi Valley are their distinctive ceramics. Tchefuncte pottery is characterized by a laminated paste which appears to lack tempering. Replication studies suggest that the laminated texture is simply the result of minimal preparation of the raw material (Gertjehansen and Shenkel 1983), an expected feature of an incipient ceramic technology. Other diagnostic attributes of Tchefuncte ceramics include the use of podal supports and decorative techniques such as jab-and-drag incising.

The evidence for food production in Tchefuncte culture presently comes from one site, Morton Shell Mound (16IB3), where remains of two possible tropical cultigens, squash and bottle gourd, and one possible native cultigen, *Polygonum*, were reported (Byrd and Neuman 1978:11-13). Fritz and Kidder (1993:6-7) have reviewed the data from this site and suggested that none of these remains can be accepted as definite evidence of cultivation. The squash seeds from the site are small, within the size range of wild gourds, and the *Polygonum* seeds are not those of the domesticated species, *P. erectum*. The status of the bottle gourd is uncertain, but it could have been collected from specimens washed up on the coast. Mound construction, now well-documented for the preceding periods, is surprisingly not clearly associated with Tchefuncte culture. Gibson and Shenkel (1988:13-14) have summarized the evidence for the association of mound construction with Tchefuncte occupations at four sites: Lafayette Mounds (16SM10) and Coulee Crow (16SM17), both located on the Vermilion River, Lake Louis (16CT24), located on Macon Ridge, and Boothe Landing (16CT31),

located on the Ouachita River north of Harrisonburg. Gibson (1974:85) suggests that the mounds served as communal burial locales for a dispersed population residing at small, seasonal base camps or semi-permanent villages.

Phillips (1970:882-884) included three Tchefuncte components in the vicinity of the present project area in his Lafayette phase, named for the small mound group partially excavated by Edwin Doran in 1941 (Ford and Quimby 1945:21-24). All three components, Bayou Sorrel, Bruly St. Martin, and Clara Murry (16IV12), were based on small numbers of sherds collected by McIntire (1958). Weinstein and Rivet (1978) later reanalysed this material and suggested including it in their Beau Mire phase, a late Tchula period construct based on test excavations at the type site located east of the Mississippi River in Ascension Parish. Two other sites near the present project area, Schwing Place Mound (16IV13) and Greenwood Cemetery (16SMY19), have also produced small quantities of Tchefuncte ceramics. It also remains possible that the Poverty Point objects from the Schwing Place, Bayou Sorrel, and Miller Place (16SM6) sites may date to this time period instead of the preceding one.

Marksville Period, A.D. 1-400

In many parts of eastern North America this period is marked by evidence of extensive interregional contact through a phenomenon labeled the Hopewell Interaction Sphere (Struever 1964). The focal points of this interaction sphere were societies in the Ohio and Illinois River valleys which acquired large quantities of exotic raw materials, including obsidian, copper, mica, shark's teeth, and marine shells, in exchange for specialized finished goods such as copper-covered panpipes and ear spools (Stoltman 1978:721). Various theories have been offered to explain the nature of this interaction, some emphasizing socio-religious systems and others pointing to economic networks, but the problem remains unresolved.

Within the Lower Mississippi Valley, the culture that participated in this interaction sphere is termed Marksville. Toth (1988:211-212) has argued that Marksville culture developed out of Tchefuncte as a result of intermittent contacts with cultures in the Illinois River valley area, but he only speculates on the nature of these contacts. He emphasizes that the evidence for Hopewellian interaction is largely limited to the Marksville mortuary system and aspects of ceramic decoration. Marksville burial patterns indicate a system of episodic, group interment with little regard for individual status (Toth 1988:29-42). Other cultural subsystems, such as subsistence and settlement pattern, may have changed very little from the preceding Tchula period. Subsistence data from Marksville sites are limited, but the available information suggests a broad-based hunting and gathering economy (Kidder and Fritz 1993; Mariaca 1988). Current evidence from sites in the Midwest suggests that while maize may have been present at this time, it was of only minor importance to the economy (Smith 1989:1569).

Very few Marksville sites have been excavated in the present region. A single pit at the Oak Chenier site (16SMY49), excavated by Gibson (1978:Table 16) near the confluence of bayous Chene and Penchant yielded a late Marksville ceramic complex dominated by

Marksville Incised, var. *Yokena* and Marksville Stamped, var. *Manny*. A single flexed burial was also excavated from these same levels (1978:129).

Toth (1988:196) defined the Marksville period Smithfield phase as stretching "from the mouth of the Red River ... to the deltaic plain which begins at Lake Verret", with components at the Smithfield (16WBR2), Medora (16WBR1), and Monks (16PC5) sites to the east of the present project area. He notes no components, however, in the project area, although he tentatively assigns a Smithfield component to Bayou Goula, to the east of the project area, and suggests that the Schwing Place Mound may belong to this phase based on Moore's description of the site.

Baytown Period, A.D. 400-700

The period following the Hopewellian florescence has been characterized as a time of cultural decline throughout much of eastern North America (Griffin 1967:187). This is certainly implied in Phillips' (1970:901) statement that ceramic decoration was "at a remarkably low ebb" during this period in the Lower Mississippi Valley. However, a number of researchers have suggested that the apparent decline may not have been as pervasive as previously believed. In the Midwest, Braun (1977) and Styles (1981) have argued that this period, in contrast to earlier interpretations, was a time of population growth and increased regional social integration. Along the Florida Gulf coast an elaborate culture called Weeden Island developed during this time (Milanich and Fairbanks 1980:89-143).

Two archaeological cultures are now thought to have been present in the Lower Mississippi Valley during the Baytown period. One of these, Baytown culture, occurred in the northern portion of the valley, primarily in eastern Arkansas, western Tennessee and northwestern Mississippi (Jeter et al. 1989:Figure 14). The other culture, Troyville, extended from northern Louisiana and the adjacent portion of Mississippi south to the Gulf of Mexico.

Changes were also occurring in the stone tool tradition during this period. Small arrow points began to replace dart points, reflecting a transition from the atlatl to the bow and arrow. The limited subsistence data suggest a continuation of the hunting and gathering economy that characterized the previous periods (Carr 1982; Kidder and Fritz 1993). Presently there is no evidence of maize from Baytown period contexts, but there is evidence of the cultivation of some of the native seed crops at sites in the northern portion of the Lower Mississippi Valley (Fritz 1990; Weinstein et al. 1995:275).

Mound building continued in the Baytown period, and there are indications that a shift from a mortuary function to a building substructure began toward the end of this time (Rolingson 1982). Burial programs resembled those of the Marksville period, in that a wide variety of interment types may be found within a single site, ranging from full extended inhumations to bundle burials, single skulls, cremations, and multiple burials. Important shifts in both burial program and mound construction may signal key changes in social structure in the later phases of the Troyville culture of the central Lower Valley. Burials appear to become more focused on the interment of individuals rather than large groups, and platform mounds begin to supplant accretional burial mounds, often covering them

(Rolingson 1982; Steponaitis 1986; Kidder and Wells 1992). Steponaitis (1986) and Kidder and Wells (1992) have interpreted these changes as important steps in the evolution of later ranked societies in the lower Mississippi Valley, possibly the first signs of important social change since mound construction began in the region.

Troyville components throughout southeast and south-central Louisiana have been assigned to a single phase, Whitehall, named for the Whitehall site (16LV19) on the Amite River (Phillips 1970; Weinstein 1974). Again relying on McIntire's data, Phillips listed components at Grand Bayou (16IV6), Little Goddel Bayou (16IB7), and Miller Place near the present project area.

Coles Creek Period, A.D. 700-1200

Elsewhere in eastern North America this time interval corresponds to the latter portion of the Late Woodland period and the beginning of the Mississippi period. Within the Lower Mississippi Valley, a cultural florescence that shows a marked resemblance to Weeden Island culture of northwest Florida occurs during this period. This is especially true in the coastal regions of Louisiana. The precise nature of the relationship of Coles Creek culture to Weeden Island is uncertain, but the similarities in ceramic decoration and community pattern are unmistakable. Both were characterized by the use of incised, stamped, and punctated pottery types in which the decorative zone is largely restricted to a band around the rim of the vessel, and by the construction of small platform mounds around plazas.

The development of substantial programs of mound construction, which tend to follow similar patterns from site to site, as well as the inferred presence of mound-top residence, have been interpreted as an indication of the development of ranked social systems during this period (Belmont 1967; Williams and Brain 1983:369-374; Wells 1998:359-362). At a few sites, such as Mt. Nebo (16MA18) in north Louisiana and Lake George (22YZ557) in the Yazoo Basin, some individuals appear to have been treated differently in death than others, suggestive of differential status. Coles Creek societies were once thought to have been based on economies which included the cultivation of maize; however, recent ethnobotanical data suggest that neither maize nor the native North American seed crops were of importance at this time (Fritz and Kidder 1993:8-9; Kidder and Fritz 1993:291-294; Wells and Roberts 1996). Intensive fishing, hunting and gathering supplemented by cultivation of a few plants, such as squash and gourds, are currently believed to have provided the subsistence base.

Coles Creek period occupations are relatively common within the study area. Three Coles Creek period phases are now recognized in this region: Bayou Cutler, Bayou Ramos, and St. Gabriel. The earliest of these, Bayou Cutler, was established by Phillips (1970) based on data from Kniffin (1936) and McIntire (1958).

The Bayou Ramos phase was proposed by Weinstein et al. (1978) using data from the Bayou Ramos I site (16SMY133) located near the southern border of the study area. The late Coles Creek St. Gabriel phase was set up by Brown (1985) based on data supplied by

Woodiel (1980) from the type site (16IV128) in Iberville Parish. A St. Gabriel phase component has been excavated at the Thibodaux site (16AS35), a stratified shell midden on Bayou Boeuf near the southern border of the project area (Weinstein et al. 1978:34-55).

Mississippi Period, A.D. 1200-1700

The last prehistoric period in eastern North America witnessed the development of chiefdom-level societies based on intensive cultivation of maize, beans and squash. Perhaps the most dynamic of these societies appeared in the Central Mississippi Valley about A.D. 1000. Referred to as Mississippian culture, it was characterized by a shell-tempered ceramic industry and a settlement pattern including large mound centers and nucleated habitation sites which were often fortified (Stoltman 1978:725). During the first centuries of the second millennium A.D., this culture spread rapidly along the major river valleys of this portion of the continent. The nature of this expansion, either by movement of people or diffusion of ideas, is still debated, but by A.D. 1200 Mississippian culture was found as far south as northern Florida and as far east as Georgia.

In the Lower Mississippi Valley Mississippian culture encountered an indigenous non-Mississippian culture, and a hybridization of the two occurred. Phillips (1970) considered the resident culture to have been Plaquemine, an outgrowth of Coles Creek culture which began about A.D. 1000. He viewed the interaction between Mississippian and Plaquemine culture as resulting in gradual changes in the Plaquemine ceramic tradition and settlement pattern. Later in the period, after A.D. 1400, an actual intrusion of Mississippian groups displaced the resident Plaquemine groups. Brain (1978) offered a somewhat different interpretation of this sequence of events. He argued that the Lower Mississippi Valley culture which experienced the initial Mississippian contact about A.D. 1100 was Coles Creek, and that the resulting hybridization produced Plaquemine culture. The remainder of the period saw a gradual increase in Mississippian influence, at least in the Yazoo Basin, until about A.D. 1400 when a full Mississippian cultural pattern was achieved in the Lake George phase (Brain 1978:362). Brain's reinterpretation of the cultural sequence resulted in a shift in the established chronologies. Phases such as Crippen Point and Preston, which were formerly considered Plaquemine culture manifestations of the early Mississippi period, were placed late in the Coles Creek period and assigned to a late Coles Creek culture that persisted until A.D. 1200.

While disagreeing somewhat on the origin of Plaquemine culture, all authorities concur that it exhibited numerous continuities with the preceding Coles Creek culture. Several of the Plaquemine ceramic types appear to be direct outgrowths of Coles Creek types. There are some changes, however, including the addition of small amounts of finely ground shell and other organic matter to the pottery and the extension of the decorative field to include the body of the vessel. Mound construction continued on an even greater scale than in the previous period. The mounds were now larger, there were more at each site, and there were more mound sites. Intensive agriculture is presumed to be the economic base on which this florescence was built, but there is presently little direct evidence of it in the Lower Mississippi Valley until late in the period (Kidder 1993:133-136).

Several regional phases of early Plaquemine culture have been identified in southern Louisiana. The closest of these to the present project area is the Medora phase, proposed by Gagliano (1967) based on the data provided by Quimby (1951) from the WPA-era Medora site excavations in West Baton Rouge Parish.

The Bayou Petre phase is another potentially important influence on the study area. Formally defined by Gagliano (1967) and Phillips (1970), from Kniffen's 1938 collections in St. Bernard and Plaquemine Parishes, it is thought to represent intrusive peoples or ideas from the northeastern Gulf coast. The ceramic assemblage at Bayou Petre phase sites is dominated by material that bears a distinct resemblance to the shell-tempered "Pensacola variant" ceramics of the Alabama and Florida coastal Mississippian societies.

By A.D. 1500, new influences began to be felt in the Louisiana coastal zone, as aboriginal groups began to take on the appearance, at least in material culture, of the peoples encountered by the early European explorers. This late Plaquemine culture is recognized by one overextended phase, called Delta Natchezan. Created by Phillips (1970), this phase includes all south Louisiana sites with ceramics similar to those recorded for the protohistoric and historic Natchez. The type site for this phase is Bayou Goula, the assumed location of the historic Bayagoula, excavated during WPA days and reported on by Quimby (1957).

Regional History

Colonial Period, 1542-1803

The expedition of Hernando de Soto in 1542 brought the first Europeans into the Lower Mississippi River Valley, but no effort was made to establish a presence there until the dawn of the eighteenth century.

In an attempt to extend its holdings and to prevent Spain from achieving total control of southeastern North America, Robert Cavalier, Sieur de La Salle, explored the lower Mississippi River in 1682 and claimed Louisiana for the French crown. In March, 1699, Pierre le Moyne, Sieur d'Iberville, led a group of explorers up the Mississippi River from the Gulf Coast. Iberville's brother, Jean Baptiste Le Moyne, Sieur de Bienville, explored Bayou Lafourche for a distance of about thirty miles in September 1699 (Uzee 1968:122).

Iberville's expedition also visited and established relations with the Bayogoula and Mougoulacha, "two nations joined together and living in the same village" (McWilliams 1981:59). This village site was later the site of the Paris-Duverney concession. Iberville described the village as one-fourth league (about 0.5 mile) from the river, with a small stream providing freshwater. The village had 107 houses and two temples - one for the Bayogoula and one for the Mougoulacha, and was enclosed by a cane palisade, one inch thick and ten feet high. Iberville inspected one temple, which he described as thirty feet in diameter, dome-shaped, and built of mud-plastered staves the height of a man. The houses were constructed in the same manner and roofed with split cane (McWilliams 1981:62-63).

At the time of his visit, Iberville noted the effects of smallpox on the Bayogoula population, remarking that the disease had killed one-fourth of the people (McWilliams 1981:63). The effects of disease, the merging of smaller groups, and pressure by Europeans and larger tribes caused numerous migrations and relocations of Indian groups after the arrival of the Europeans. The Bayogoula attacked the Mougoulacha, initiating a devastating war between them. The remaining Bayogoula merged with the Houma in the 1730s. Neither they nor the Mougoulacha remained a distinct group after that time. At about the same time, the Ouacha and Chaouacha merged and were last reported living on the German Coast above New Orleans (Swanton 1946:95, 204).

By 1702 the Chitimacha had begun to move in large numbers from the Grand Lake/Bayou Teche region to the upper reaches of Bayou Lafourche, which came to be called by the French, la fourche des Chitimachas or la rivière des Chitimachas. From his outpost on the lower Mississippi River, Fort de la Boulaye, Louis Juchereau de St. Denis, Iberville's nephew by marriage, launched an unauthorized expedition manned by French Canadians and Acolapissa Indians up the Mississippi River in 1702. In a side trip down Bayou Lafourche, the expedition was allegedly fired upon by a band of Chitimacha settled close by. St. Denis captured a number of these Indians, former allies of the French, and sold them into slavery at Mobile, beginning a long and acrimonious relationship between the French and the Chitimacha (La Harpe 1971:60; McWilliams 1981:120).

Skirmishes, murders, and slave raids characterized the relationship between the Chitimacha and French until peace was established between them in 1718. Antoine Simon le Page du Pratz witnessed the peacemaking ceremony, the proceedings of which were translated for him by the Chitimacha slave he had purchased upon his arrival in New Orleans. One of the conditions of peace imposed by Governor Bienville was that the tribe would relocate to the banks of the Mississippi River, one league below the Paris concession above the confluence of the Mississippi and Bayou Lafourche (Du Pratz 1975:316-17). D'Anville's 1732 map shows the Chitimacha village above the Paris concession on the left bank of the Mississippi River (D'Anville 1732).

At least a part of the Chitimacha remained settled in the Lafourche area, although they maintained a presence in the coastal wetlands and the Bayou Teche region to the west. The Chitimacha were counted in the Lafourche region in 1758, when Governor Kerelec noted the presence of eighty warriors (Rowland and Sanders 1984:[5] 213).

When first encountered by Iberville in 1699 the Houma occupied a village located near present-day Angola Prison. They abandoned this village in about 1706. According to Jean Baptiste Bénard, Sieur de La Harpe, the village had been attacked and taken over by the Tunica, who had abandoned their Yazoo River location in response to pressures by the Chickasaw and Alibamons. The remaining Houma subsequently formed a village at Bayou St. Jean nearer to their French allies at New Orleans (La Harpe 1971:100-1). André Pénicaud stated, however, that the Houma deserted their settlement, subsequently inhabited by the Tunica, and relocated to "the bank of the Missicipy [sic] River near the Rivière de Chetimachas [Bayou Lafourche]" (McWilliams 1953).

The Houma continued to inhabit the Bayou Lafourche area throughout the French and Spanish colonial periods. Not restricted to a single village, their settlement area encompassed both sides of the Mississippi River including the present-day towns of Burnside and Donaldsonville. Joseph de La Porte noted in 1749 that the Houma lived in two villages two leagues (five miles) south of Lafourche (Bowman and Curry-Roper 1982:8). These are probably the Ascension Parish locations of the Petit and Grand villages of the Houma, identified archaeologically by Brian Guevin (1979; 1984).

Struggling to place itself competitively within the European mercantile world economy dominated by Spain, Portugal, and England, France experimented with systems designed to return resources from Louisiana to be converted to wealth on the European markets. After Antoine Crozat relinquished his proprietorship over the colony in 1717, financial responsibility was transferred to Scottish financier, John Law (Allain 1988:61-67).

Law sold the French government a plan to liquidate the debt of the state, increase its revenue, and diminish taxation by the creation of a private bank over which he would serve as director. The Mississippi Company was created in 1717 to administer trade and colonization in Louisiana, which became a "sort of commercial fief" in support of France. Law was appointed director-general of the Mississippi Company, which merged with the Royal Bank to become the Company of the Indies (Gayarré 1885 [1]:205).

Law's plan was to exploit Louisiana's vast agricultural and mineral wealth through minimal colonization. The Company provided charters to "prominent capitalists and noblemen" (Charlevoix 1977:265) anxious to reap the profits they imagined the colony would generate. The concessions they established were financed with state notes issued by Law's bank, which would then implement loans to the Company to fund colonization. Ideally the Company would enrich the state through trade and the retiring of the national debt (Allain 1988:67).

Although the concessions were usually made in the name of one concessioner, in fact, a company of colonization generally included many partners or investors (Giraud 1966:205). Law's plan placed a huge fiscal responsibility upon the individuals granted concessions in Louisiana, many of whom would never see their New World properties. Concessioners were required to provide considerable capital with little actual return. Certainly the concessioners had great hopes for their settlements, but absentee ownership, administrative and financial problems, and New World hardships combined to doom Law's system to failure.

The French colonization movement was brief, and the concessions contributed little to the overall economic development of France. The failure of John Law's economic plan for the colony caused the rapid abandonment or reduction of most of the concessions. Workers went unpaid and deserted the concessions, others were released or fired, and the settlements dwindled.

For the most part, the concessions were no more than small, agricultural enterprises that were poorly equipped and under-supported. A few settlements like Pointe Coupée held

on through the French dominion over Louisiana and eventually grew into small towns, but most others were abandoned within the first few years.

Except for the Bayogoula concession, the Lafourche district was not developed or settled by Europeans to any extent during the French colonial period. The area was still dominated by several groups of Indians. By the 1720s the Chaouacha, Bayogoula, Houma, Acolapissa, Chitimacha, and Tunica were all located within a 100-miles radius of New Orleans in order to participate in the colonial economy dominated by a regional exchange system. Members of these small nations provided goods and services - especially meat, produce, and hides for trade - to settlement centers like New Orleans (Usner 1991:62-63). The Chitimacha and Houma settled in the Lafourche region no doubt provided the same services to those residing at the Bayogoula concession.

Not until Spain acquired Louisiana west of the Mississippi River and the Isle D'Orleans at the end of the Seven Years War in 1763 was any concerted effort made to place European settlements near the project area. Both Spain and England, with its new lands in West Florida, instituted more aggressive immigration efforts. In 1763 only four thousand white colonials inhabited the Lower Mississippi Valley, the majority being creoles born in the colony. The European ruling powers saw these creoles as both innovators and benefactors of the frontier exchange economy, and hoped that immigration would provide new settlers with closer ties to the home governments. The immigration of Acadian refugees after 1765 represents only the second wave of migration into the area after the Company of the Indies program in the 1720s (Usner 1991:108-109).

The Acadian expulsion from Nova Scotia took place in 1755, and refugees began immediately to migrate to French Catholic Louisiana in small numbers. The large-scale migration, however, took place after 1765. Spanish officials desired the immigration of Catholic farming families, and in 1767 the Council of the Indies allocated 25,000 pesos a year to assist the immigrants. By 1769 over 1,000 Acadians had entered the colony (Usner 1991:109). Some settled along the Mississippi River in the area of present-day Ascension and St. James parishes, which became known as the Acadian Coast, while others settled farther downriver on the German Coast, present St. Charles and St. John the Baptist parishes. Others went to the small Spanish posts of Attakapas (present-day St. Martinville) and Opelousas, or settled the area around Bayou Lafourche (Post 1962:1-2).

In Nova Scotia the Acadians had been primarily farmers and fishermen. They were accomplished at reclaiming tidal flats for farming, and were successful raising stock and in general subsistence farming. Their skills were well suited to conditions in the Louisiana colony (Post 1962:3-4). Each newly arrived immigrant family received from six to eight arpents frontage on a waterway, either river or bayou, with forty arpents depth. Near the present project area, settlers first claimed the lands along Bayou Lafourche and Bayou Plaquemine nearest the Mississippi River. The ecclesiastical parish of Ascension at the Lafourche of the Chitimachas was established in 1772, followed by the district of Valenzuela encompassing Assumption Parish in 1778 (Uzee 1968:122).

Acadians continued to arrive in Louisiana until 1785, joined between 1778 and 1780 by six ships carrying 2,000 Canary Islanders or Isleños. The Isleños established several settlements in lower Louisiana, including Valenzuela near the confluence of Bayou Lafourche and the Mississippi River and New Iberia in the Attakapas region. Between 1763 and 1783, the colonial population in the Lower Mississippi Valley increased threefold.

Sharing the region with this influx of Acadian and Isleño settlers were several groups of Indians that had recently emigrated from British territory. Learning of the change of governments in 1763, many of the small Indian nations requested, "to die among the French" (D'Abbadie in Villiers du Terrage 1982:203). Kept informed by their creole allies, the Indians were aware that the English desired their land for colonization, while - at least for the present - Spain wished to continue commercial relationships with the tribes (Moore 1974:80).

Several small nations from east of the Mississippi, including the Apalachees, Pacanas, Mobilians, Biloxis, Chahtos, Pascagoulas, Alibamons, and the Taensa, petitioned to move into Spanish-held Louisiana. Tribes previously separated by great distances now dwelled close to the posts for both protection and commerce, and the competition for goods and privileges was undoubtedly fierce.

Tribes allied with the English occasionally menaced those on Spanish soil, whether instigated by traders or as the result of old enmities. In 1772 and 1773, widespread rumors warned of an intended Tallapoosa attack on the Houma. A month later the Houma moved their village to the old Chitimacha village site on the left bank of Bayou Lafourche to further separate themselves from the Tallapoosa.

The principal Houma village in 1773, consisting of about forty warriors, was located in the Lafourche district sixty miles upriver from New Orleans on the east bank of the Mississippi River, with another village on the opposite bank of the river (Usner 1991:168-169). By the late eighteenth century the Houma, due to pressure from Europeans, began abandoning these villages and moving down Bayou Lafourche to the vicinity of present-day Houma.

The Chitimacha also continued to inhabit the Lafourche district during the Spanish period. At least one village, headed by chief Unzaga Champana, was located on Bayou Plaquemine in 1787. Two other villages, under Mingo Luak or Fire Chief and Red Shoes, were located on Bayou Teche.

The frontier exchange economy that had developed during the French administration of Louisiana remained basically unchanged after the acquisition by Spain. Strategies of hunting, fishing, herding, and agricultural production long practiced by the Indians were adopted by the colonials and their slaves. The Indians also traded their surplus foodstuffs and hunted deer and smaller mammals to procure skins for the foreign market (Usner 1991:149-155). The exploitation of the local environment, supplemented by agriculture and trade, characterized the economy of inhabitants of the region, whether Indian or white.

The European settlers near the project area, at this time primarily Acadians, set up a chain of small farms fronting the waterways. Bayou Lafourche became like a long village street, crowded with homes and gardens fronting the water, crops placed on land behind, and backed by woods in swamp or forest. The people who inhabited the bayous were known as *les petits habitants*. The bayous, deemed unsuitable for large-scale plantations in the eighteenth century, fitted the economic needs of small subsistence farmers.

The average farm was six arpents front by forty deep, placed on the fertile levee crest near the bayou. Beyond the back line were often found brûlés [ridges; natural high points] and swamps. *Les petits habitants* grew corn, cotton, rice, and vegetables, raised hogs, chickens, and a cow or two, fished the bayous, and hunted in the swamps and marshes. The American period would see an influx of large-scale planters, and the way of life of many of *les petits habitants* would change dramatically (Uzee 1968:122-123).

The Louisiana colony, although potentially very valuable, was a constant drain on the Spanish government. Administration costs in the colony rose steadily throughout Spanish tenure in Louisiana. Construction and maintenance of the forts, costs of keeping the militia viable, and the rising costs of Indian gifts all contributed to the colony's economic difficulties. Although Spain maintained an interest in developing Louisiana, and did more to advance economic interests there than had France, the colony was too much of an economic liability to justify its defensive value.

On October 1, 1800, the Treaty of San Ildefonso was enacted between Spain and France retroceding Louisiana to France. Napoleon recognized Louisiana's potential for cotton and sugar production; but the loss of Saint Domingue prompted Napoleon to sell Louisiana to the United States. Thomas Jefferson understood that control of the port of New Orleans and the Mississippi River was necessary to further American expansion. On April 30, 1803, the United States acquired the Louisiana territory for the price of \$15,000,000.

Antebellum Period, 1803-1860

After the Louisiana Purchase thousands of American immigrants moved west of the Mississippi River seeking land on which to build an agricultural empire. Plantations built primarily upon slave labor-produced cotton and sugar flourished.

Trade with the Indians declined in importance during the American period. The transformation from a regional economy based on Indian trade to one based on market agriculture resulted in a push for Indian peoples to either assimilate or relocate. Although Indians settled within the study area ceased to be acknowledged by the American government, they did continue to inhabit the area and to use the Atchafalaya basin for hunting throughout much of the nineteenth century.

The Chitimacha maintained settlements on Bayou Plaquemine and Bayou Jacob until at least the Civil War, but gradually their numbers there declined as Americans purchased the land in this area. The two Bayou Teche villages of the Spanish period coalesced into the single village at Charenton which is still occupied today.

By the early nineteenth century small numbers of Houma remained along the Mississippi River in Ascension Parish, but the majority of the tribe had moved to the bayous of Terrebonne Parish. Their settlement pattern in this area seems to have consisted of dispersed households rather than nucleated villages. During the early nineteenth century Houma settlements spread from the area around present-day Houma east to Point Aux Chenes and west down Bayou du Large and Little Bayou Black.

The interior of the Atchafalaya Basin remained largely uninhabited by non-Indians until the 1830s. By that time demand for agricultural land had increased to the point that Anglo-American planters began establishing sugar plantations along Bayous Grosse Tete and Maringouin. In the following decade they extended even farther into the swamps along Grand River and Bayous Chene and Sorrel. Initially many of these planters held the land without title, as much of this area was not surveyed until the late 1840s.

Flooding retarded the development of sugar agriculture in the basin, and increased in intensity after the raft of timber was removed from the upper Atchafalaya River in the 1840s and 1850s. The removal of the raft system inundated the Lower Atchafalaya, which had not been cleared or dredged and could not accommodate the increased volume of water. Thereafter, the area that was previously "exempt from overflow" was subject to annual flooding (Mississippi River Commission 1881).

The rapid influx of Anglo-American planters after 1830 also had a major impact on the Lafourche country. These Protestant, monied gentry bought out many of the small Acadian farmers in order to establish sugarcane plantations. The planters brought with them a huge slave population, and built mills and refineries to process their sugar. By 1840 sugarcane was the leading cash crop on Bayou Lafourche, and the social and economic pattern of the region was altered (Uzee 1968:123).

Acadians displaced by the plantation system followed two migratory patterns: from the river parishes to the Lower Lafourche Valley and St. Landry Parish, and from the upper Lafourche Valley to the Atchafalaya interior - northern Terrebonne Parish, Assumption Parish, and along Bayou Black in western Terrebonne and southeastern St. Mary Parishes (Brasseaux 1992:109).

It was the Atchafalaya swamp that produced what Comeaux has called a "Cajun swamp culture" (1978:151). They first inhabited the *brûlés*, the old natural levees on the eastern side of the swamp. There was a slow cultural change through the 1800s as the Acadian agriculturalists became Cajun swampers, especially as the increasing severity of floods inundated former farmland. Crops, even family gardens, were abandoned. House styles within the basin also changed to accommodate higher waters. In the latter part of the century the houseboat was introduced from the upper Mississippi River system, and many swamp dwellers adopted this portable housing that allowed them to move throughout the swamp to be near their fishing grounds (Comeaux 1978:151-2).

The bayous and rivers provided the primary means of transportation and communication to the remote reaches of the Atchafalaya interior throughout the eighteenth

and nineteenth centuries. The typical mode of transportation until the 1820s was the pirogue (Post 1962:8-9).

The *Eagle*, the first steamboat on Bayou Lafourche, appeared in the 1820s commanded by Captain F. N. Streck, who had operated a schooner on the bayou before the steamboat. It took two days to travel from Bayou Lafourche to New Orleans. Steamboats were able to navigate the bayou from about January through the end of June, when the water level at the head of the bayou became too low.

Trading boats (*caboteurs*) supplied the needs of the small farmers and swamp and marsh dwellers. Oyster, fish, and fruit; ice; saloon boats; showboats; and travelling doctors and dentists were transported by *caboteurs*. Flatboats, pirogues, and ferries were used to cross from one side of the bayous to the other. Ferries were usually positioned in front of churches and schools, or the principal crossing in each community.

Civil War and Reconstruction, 1860-1890

During the Civil War Confederates fortified Brashear City (Morgan City), located at the southern end of the Atchafalaya Basin because of its strategic position at the junction of the Atchafalaya River, Bayou Teche and the New Orleans, Opelousas and Great Western Railroad. After the fall of New Orleans in the Spring of 1862 Union forces seized the railroad and, in the Fall of that year, occupied Brashear City. It became their base of operations for the Atchafalaya Basin and Bayou Teche. Union gunboats controlled the navigable waterways, but Confederate guerrilla forces remained active in the region.

After the Civil War flooding became more severe due to the rapidly increasing flow down the Atchafalaya River and the poor condition of the levees. A particularly bad flood in 1874 convinced many planters in the interior of the basin to give up agriculture altogether. The former slave population, brought in with the plantations, largely abandoned the area.

The primary economic pursuit in the interior became centered more on natural resource exploitation than agriculture after the Civil War. Although many *petits habitants* had been forced into the swamps as American settlers purchased prime lands to form plantations, just as many were attracted by the autonomy of the swamps. Trappers and fishermen valued their independence and self-sufficiency, as well as the isolation afforded by the swamps.

Houses lined and faced the bayous in these interior settlements, as did churches, stores, and later mills and schools. In front of each house was a pier for tying up the boats and drying nets. Behind the houses were chicken coops, outhouses, outbuildings, and gardens. Houses were constructed of cypress board and batten, usually shotgun-style or Acadian cottage-style with front and back porches.

An economy based upon hunting and gathering became common in the Atchafalaya interior. The swamp provided an abundance of resources to be exploited. The primary occupations of harvesting of fish, crabs, pelts, and cypress could be accomplished with little

capital outlay and little prior experience. Secondary "swamp crops" included frogs, moss, alligators, turtles, deer, and ducks.

Industrial and Modern Period, 1890-1950

Commercial fishing was the primary way of making a living in the Atchafalaya interior until World War II. Fishing spots were claimed and recognized by families in the interior (Bergeron 1975:19). Fishing in the Atchafalaya interior became commercialized in the 1870s, when boats from New Orleans began to enter the area and buy large quantities of fish and game. Severe flooding in the latter part of the century only increased the supply of fish in the basin and caused only minor inconvenience to interior fishermen, many of whom lived on houseboats. This era marked the beginning of the modern period of commercial exploitation, pulling swamp dwellers into the national economy and making them dependent upon it (Comeaux 1978:152).

Trapping was an important economic activity during the winter months. Families generally built a small palmetto camp or lived on a campboat near their trapping grounds, inhabiting these temporary dwellings for up to three months at a time. Raccoon, mink, opossum, nutria, muskrat, and otter were the cash pelts of the interior region. Trapping activities peaked between 1922 and 1923, when ten million muskrats were taken in Louisiana.

By 1929, when 6.2 million muskrats were taken in Louisiana, the Great Depression caused prices paid for skins to plummet. Assumption Parish counted 275 trappers in 1925, while St. Martin Parish had 125. By 1928 only 109 trappers were counted in Assumption Parish, with only twenty-one in St. Martin (Arthur 1928). In 1975, Bergeron found only three residents of the southern Lake Verret area who still trapped.

The moss industry gained importance in the interior in the 1920s and 1930s, when roads were built allowing goods to be transported in and out of the region. Many fishermen supplemented their income in the winter and spring by collecting Spanish moss to be used for stuffing furniture and automobile seats, but some families around Pierre Part depended totally on moss gathering for their income. Some moss pickers sold the green moss to area factories, while others cured the moss themselves and commanded a higher price. A good moss-picker could average five hundred pounds a day, and in 1930 moss sold for three cents per pound. The moss industry declined after 1940, as synthetics replaced moss as stuffing.

Besides swamp-based economic pursuits, families tried to have at least a small garden to provide vegetables for themselves. If a family dwelling on the water did not have enough land behind it to support a large garden, they found a piece of high ground nearby, uncleared and unclaimed, and cleared and planted it. Some families even had fruit trees and grapes. The typical family garden included corn, beans, squash, cucumbers, tomatoes, broomstraw, and sugarcane, as well as cotton to stuff quilts. Surplus vegetables and eggs were sold or traded to neighbors, or sold to lumber company pullboats. All residents kept chickens, hogs, and at least one cow (Bergeron 1975:29).

Commercial cypress lumbering increased significantly after 1890 due primarily to the depletion of timber in the northeast and Great Lakes regions and the expansion of the railroads. It persisted until about 1930 by which time much of the timber had been cut. Sawmills and mill towns were established along the main railroad lines which followed the higher natural levees along the margins of the basin.

The development of roads into the interior did not really begin until the 1920s. Roadways were practically nonexistent until after the turn of the century. People generally used the levees as roadways, even though prohibited by the government from doing so. A shell road between Morgan City and Pierre Part and Belle River was laid next to the levee between 1936 and 1951.

After the disastrous flooding of 1927, the government decided to take preventative measures to insure that floods would no longer devastate the interior. The Flood Control Act of 1928 proposed the erection of a system of locks on the old navigation channels to regulate and control the flow of the Mississippi River waters into interior waterways (Eakin 1968:114-115).

Construction of the Atchafalaya Spillway system began in 1934. As intended, the levees reduced flooding in populated areas outside of the spillway, but they also greatly increased water levels and sedimentation rates within it. Much of the extensive area of shallow lakes that characterized the basin in the late nineteenth and early twentieth centuries was filled by the 1970s. Topographic surveys conducted by the Corps of Engineers from 1932 to 1967 show that overbank sedimentation ranged from 6 ft (1.8 m) to 25 ft (7.6 m) during that period.

Completion of the spillway forced most of the swamp dwellers to move to small communities outside the floodway and commute to their fishing grounds (Comeaux 1978:152). While the commercial fishing and trapping industries began a steady decline in the 1930s, crawfishing gained importance at about the same time. Unlike other crawfish production areas in southwestern Louisiana, the interior fisherman harvests directly from the basin and floodway, instead of crawfish farms.

Recreational fishing has gained economic importance in the basin, to the regret of many locals. The popularity of the interior with recreationalists has led to outsiders moving into the once family-dominated communities. These new immigrants buy property to build fishing camps which drives property values up and makes it more difficult for those who have left the communities to work to return and buy land.

Recorded Cultural Resources in the Project Area

At the time of this study (September 2000) there were 71 recorded archaeological sites in the Atchafalaya Basin Floodway System project area (Table 2-2). With one exception, all of these are terrestrial sites.

Table 2-2. Recorded Archaeological Sites Located in the Atchafalaya Basin Floodway System Project Area.

Site No.	Site Name	Cultural Affiliation	Site Features	Eligibility
16IB2	Herschfield Site	Plaquemine	shell midden	unknown
16IB4		Troyville-Coles Creek, Plaquemine	shell mound	unknown
16IB5	Hoop Pole Bayou	Prehistoric (unknown)	shell mound, shell midden	unknown
16IB6	Blind Hoopole Bayou	Prehistoric (unknown)	shell midden	unknown
16IB8	Big Bayou Pigeon	Coles Creek, Plaquemine	shell midden	unknown
16IB9	Little Bayou Pigeon	Prehistoric (unknown)	earth mound	unknown
16IB10	Bayou Cowan	Prehistoric (unknown)	shell mound	unknown
16IB11	Little Bayou Pigeon (II)	Prehistoric (unknown)	shell mound, shell midden	unknown
16IB12	Smith Bayou	Prehistoric (unknown)	shell mound	unknown
16IB13	Bayou Latania	Prehistoric (unknown)	shell midden	unknown
16IB28		Coles Creek	earth midden, shell midden	unknown
16IB29		Plaquemine	shell midden	unknown
16IB42	Little Lake Long	Prehistoric (unknown)	shell midden	unknown
16IB43	Round Island	Prehistoric (unknown)	shell midden	unknown
16IB44	Shaw Island	Prehistoric (unknown)	shell midden	unknown
16IB45	Catfish Bayou #1	Prehistoric (unknown)	shell midden	unknown
16IB46	Catfish Bayou #2	Prehistoric (unknown)	shell midden	unknown
16IB47	Smith River	Prehistoric (unknown)	shell midden	unknown
16IB52		Coles Creek, Plaquemine	shell midden	unknown
16IB71		Plaquemine	shell midden	unknown
16IB72		Plaquemine	shell midden	unknown
16IB73		Plaquemine	shell midden	unknown
16IV4	Bayou Sorrel Mound	Poverty Point?-Plaquemine	earth mound	eligible
16IV15	Pigeon-Grand Mound	Prehistoric (unknown)	earth mound	unknown
16IV25	Bayou Teche	Prehistoric (unknown); Civil War	shell midden	unknown
16IV156	Alabama-Bayou Des Ourses	Prehistoric (unknown)	earth mound	unknown
16IV157	N of Jeff Miller Slough	Unknown	unknown	unknown
16PC2	Mound Bayou Mound	Troyville-Coles Creek	earth mound	unknown
16PC36	Kennmore Plantation	Antebellum-Industrial	historic scatter	unknown
16PC37	El Dorado Plantation	Antebellum-Industrial	historic scatter	eligible
16SL20		Coles Creek, Plaquemine	earth mounds-4	eligible
16SL34	Bayou Fordoche Mounds	Prehistoric (unknown)	earth mounds-2	unknown
16SL96	Bayou Duquesne Mounds	Prehistoric (unknown)	earth mounds-3	unknown
16SM1	Indian Mound Cemetery	Prehistoric (unknown)	mound	unknown
16SM2	Bayou La Rose	Prehistoric (unknown)	earth mounds-2	unknown
16SM3	Butte La Rose	Prehistoric (unknown)	prehistoric scatter	unknown
16SM4	Bayou La Rose	Prehistoric (unknown)	mound	unknown
16SM8	Bloody Bayou	Prehistoric (unknown)	mound	unknown
16SM10	Little Tensas	Prehistoric (unknown)	mound	unknown
16SM11	Ocra Bayou	Unknown	unknown	unknown
16SM12	E of Little Bayou des Ourses	Unknown	unknown	unknown
16SM16	Bayou L'Embaras	Prehistoric (unknown)	mounds-2	unknown
16SM31	Willow Cove	Prehistoric (unknown)	shell midden	unknown
16SM32	Cypress Pass	Prehistoric (unknown)	shell midden	unknown
16SM33	Bayou Chene	Coles Creek, Plaquemine	shell mound	unknown
16SM45	Nutgrass	Troyville-Coles Creek	shell midden	eligible
16SM48	Persimmon	Troyville-Coles Creek	shell midden	unknown
16SM49	Wave Wash	Neo-Indian	prehistoric scatter	unknown
16SM51	Lost Hill	Prehistoric (unknown); Civil War-Industrial	possible mound	unknown
16SM52	Long Island Bay	Coles Creek, Plaquemine	prehistoric scatter	unknown
16SM54	Merkel Stuckey	Industrial	historic scatter	not eligible
16SM83	Kem's Landing boatwreck	Industrial	shipwreck	unknown
16SM88	Bayou Macauley Cemetery	Industrial	cemetery	not eligible
16SM89	Bayou Jean Louis Cemetery	Industrial	cemetery	eligible
16SM90	Bayou Chene Ch. & Cem.	Industrial	cemetery	not eligible
16SM95	Henderson Lake	Tchefuncte-Plaquemine	shell midden	eligible
16SMY2	Charon Beach	Coles Creek-Industrial	shell mounds-5, shell midden	eligible
16SMY36	Six Mile Lake	Prehistoric (unknown)	shell midden	unknown
16SMY37	Luckland	Coles Creek	shell midden	not eligible
16SMY43	Little Pass	Prehistoric (unknown)	shell midden	unknown
16SMY104	Moccasin	Tchefuncte-Plaquemine	shell midden	unknown
16SMY105		Plaquemine	shell midden	unknown
16SMY106	Stouts Pass	Antebellum-Civil War	historic scatter	unknown
16SMY107	Henry Knight Place	Plaquemine; Antebellum	shell midden, historic structure	unknown
16SMY113		Plaquemine; Historic (unknown)	shell midden	unknown
16SMY114		Troyville - Coles Creek	shell midden	unknown
16SMY115		Plaquemine	shell midden	unknown
16SMY116		Troyville - Coles Creek	shell midden	not eligible
16SMY117		Plaquemine; historic (unknown)	shell midden	unknown
16SMY163	Riverside Pass	Plaquemine	shell midden	not eligible
16SMY164	Beaver Lodge	Neo-Indian; Antebellum	shell midden, historic scatter	not eligible
16SMY165	Clay Root	Neo-Indian	shell midden	not eligible

Terrestrial Sites

The great majority of the archaeological sites, 76 percent ($n=54$), are prehistoric occupations. A much smaller number, 11 percent ($n=8$), are historic sites, and another 11 percent ($n=8$) contain both prehistoric and historic components. The prehistoric components include a possible Poverty Point period occupation at the Bayou Sorrel site (16IV4), Tchefuncte components at the Henderson Lake (16SM95) and Moccasin (16SMY104) sites, a Marksville period occupation at the former, eight sites recorded as having Troyville-Coles Creek occupations, another 10 Coles Creek components, and 21 Plaquemine occupations. Many of the prehistoric components are listed as being of unknown age ($n=31$) or dating to some period after the Archaic ($n=3$).

Shell middens are the most common features reported at prehistoric sites ($n=42$). The site forms often do not identify the species of shellfish represented, but most of the middens are composed predominantly of marsh clams (*Rangia cuneata*). Earth middens are also not frequently reported, but this may be a reflection of a lack of data rather than a real scarcity. Mounds are reported to have been present at 22 sites. Nine sites are identified as having earth mounds, and seven as having shell mounds. Their distribution overlaps to some extent, but earth mounds occur predominantly in the northern portion of the area and shell mounds in the southern portion.

The historic occupations include six that date to the Antebellum period, seven Civil War and Reconstruction era occupations and eight that date to the Industrial and Modern era. Most of these apparently represent residential sites, although this is often difficult to discern from the limited information on the site forms. Four of the sites are cemeteries, and one appears to be the remains of a drainage machine.

Shipwrecks

Despite the substantial amount of historical information on shipwrecks in the area and the fact that several remote sensing surveys have been conducted there, only 14 shipwrecks have been recorded as archaeological sites in the project area. Only one of these sites lies within the portion of the floodway above Morgan City. This is the Kern's Landing boat wreck (16SM83), which was recorded not by a remote sensing survey, but through visual inspection of the bankline. The other 13 wrecks are all located along Bayou Shaffer, and were identified primarily through bankline inspection as well (Pearson and Saltus 1991). Historical information is available on another 60 shipwrecks which are either greater than 50 years old or of unknown age (Table 2-3). The largest numbers of these wrecks occur in the Atchafalaya River ($n=33$), but a few are reported from some of the smaller water bodies within the project area, such as Bayou Shaffer or Bayou Courtaleau.

Models of Cultural Resource Occurrence

Two models of cultural resource occurrence have been used in the present study, one for terrestrial sites and the other for shipwrecks. The terrestrial model is based on over 50 years of research in the Mississippi River deltaic plain by cultural geographers (Kniffen

Table 2-3. Shipwrecks Recorded Within the Project Area.

Vessel Name	Shipwreck Reference No.	Vessel Type	Date Lost	Waterbody in Which Vessel Was Lost	Nearest Community or Landmark	Locational Reliability
ALBERTA	1063	BARGE	8/25/1911	ATCHAFALAYA RAY	UNKNOWN	3
UNKNOWN	7	DREDGE	UNKNOWN	ATCHAFALAYA RAY	CALUNGET	1
NANIOPE	1089	SIDEWHEEL STEAMBOAT	9/15/1852	ATCHAFALAYA RAY	UNKNOWN	3
CHARLES W. MACKIE	115	UNKNOWN	9/20/1909	ATCHAFALAYA RAY	RABBIT ISLAND	3
UNKNOWN	5	UNKNOWN	UNKNOWN	ATCHAFALAYA RAY	BERWICK	1
UNKNOWN	6	UNKNOWN	UNKNOWN	ATCHAFALAYA RAY	BERWICK	1
UNKNOWN	853	BARGE	UNKNOWN	ATCHAFALAYA RAY	UNKNOWN	3
WILLIAM SHAKESPEARE	143	SHOWBOAT	10/28/1900	ATCHAFALAYA RIVER	ELMWOOD PLANT.	3
ANNA	1088	SIDEWHEEL STEAMBOAT	9/3/1852	ATCHAFALAYA RIVER	UNKNOWN	3
ANY ONE	102	SIDEWHEEL STEAMBOAT	8/20/1869	ATCHAFALAYA RIVER	MORGAN CITY	3
DE SOTO	1115	SIDEWHEEL STEAMBOAT	3/1/1844	ATCHAFALAYA RIVER	SHELL ISLAND	3
KINSMAN, U.S.S.	243	SIDEWHEEL STEAMBOAT	2/23/1863	ATCHAFALAYA RIVER	BERWICK	3
MAJOR AUBRY	134	SIDEWHEEL STEAMBOAT	2/23/1863	ATCHAFALAYA RIVER	BERWICK	3
OPELOUSSAS	135	SIDEWHEEL STEAMBOAT	11/0/1858	ATCHAFALAYA RIVER	BERWICK	3
QUEEN OF THE WEST	276	SIDEWHEEL STEAMBOAT	11/15/1857	ATCHAFALAYA RIVER	MILLET POINT	3
SULTAN	141	SIDEWHEEL STEAMBOAT	4/14/1863	ATCHAFALAYA RIVER	UNKNOWN	3
UNA	142	SIDEWHEEL STEAMBOAT	10/25/1847	ATCHAFALAYA RIVER	UNKNOWN	3
THOMPSON	803	STEAMBOAT	8/12/1867	ATCHAFALAYA RIVER	CYPRESS ISLAND	3
ACTIVE	100	STERNWHEEL STEAMBOAT	UNKNOWN	ATCHAFALAYA RIVER	MORGAN CITY	3
ARKLA	156	STERNWHEEL STEAMBOAT	1/29/1877	ATCHAFALAYA RIVER	PATTERSON	3
CHARLIE H. DUFREE	1112	STERNWHEEL STEAMBOAT	6/16/1934	ATCHAFALAYA RIVER	BIRD'S MILL	3
HELEN LANE	125	STERNWHEEL STEAMBOAT	12/6/1878	ATCHAFALAYA RIVER	BERWICK	3
HURON	126	STERNWHEEL STEAMBOAT	6/30/1919	ATCHAFALAYA RIVER	UNKNOWN	3
JENNIE LOUISE	128	STERNWHEEL STEAMBOAT	2/25/1855	ATCHAFALAYA RIVER	BERWICK	3
LESSIE TAYLOR	132	STERNWHEEL STEAMBOAT	10/29/1913	ATCHAFALAYA RIVER	GLOVER'S POINT	3
SONORA	140	STERNWHEEL STEAMBOAT	2/3/1878	ATCHAFALAYA RIVER	UNKNOWN	3
SUGARLAND	105	STERNWHEEL STEAMBOAT	11/18/1865	ATCHAFALAYA RIVER	MORGAN CITY	3
FIDGET	121	TOWBOAT	9/29/1915	ATCHAFALAYA RIVER	BERWICK	3
RESTLESS	138	TOWBOAT	4/10/1884	ATCHAFALAYA RIVER	BERWICK	3
ALTON	101	UNKNOWN	9/25/1914	ATCHAFALAYA RIVER	MORGAN CITY	2
AZELIE	103	UNKNOWN	9/1/1915	ATCHAFALAYA RIVER	MORGAN CITY	3
HARNET	124	UNKNOWN	12/14/1888	ATCHAFALAYA RIVER	BIG BEND	3
JIM	129	UNKNOWN	9/1/1879	ATCHAFALAYA RIVER	MORGAN CITY	3
JOHN WILSON	130	UNKNOWN	7/16/1882	ATCHAFALAYA RIVER	RICHARDS LANDING	3
LIZZIE E.	104	UNKNOWN	9/27/1888	ATCHAFALAYA RIVER	MORGAN CITY	3
MARGARET	199	UNKNOWN	2/26/1877	ATCHAFALAYA RIVER	MILLET POINT	3
ONIDA	1220	UNKNOWN	10/4/1893	ATCHAFALAYA RIVER	PATTERSON	3
UNKNOWN	1142	FLATBOAT	UNKNOWN	BAYOU COURTABLEAU	UNKNOWN	1
E.H. BARMORE	1332	UNKNOWN	UNKNOWN	BAYOU COURTABLEAU	PLAQUEMINE	1
	793	FERRYBOAT	UNKNOWN	BAYOU PIGEON		3

(continued)

Table 2-3. Concluded.

Vessel Name	Vessel Type	Date Lost	Waterbody in Which Vessel Was Lost	Nearest Community or Landmark	Locational Reliability
PANOLA	STEAMBOAT	6/29/1842	UNKNOWN	HENDERSON	3
Kern's Landing (16SMY83)	UNKNOWN	UNKNOWN	BAYOUPORTAGE	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 1	LAFITTE SKIFF	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 2	FLATBOAT	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 3	BATEAU	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 4	PIROGUE (BOARD)	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 5	SKIFF	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 6	SKIFF	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 7	FLATBOAT/LAFITTE SKIFF	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 8	MOTORIZED LUGGER	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 9	MINE SWEEPER	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 10	BARGE	19th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 11	SLOOP	19th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 12	SKIFF	20th CENTURY	BAYOU SHAFFER	BATEMAN'S ISLAND	1
16 SMY 55/56, Watercraft 13	SIDEWHEEL STEAMBOAT	1/11/1850	BAYOU SORREL	UNKNOWN	3
BERTRAND	UNKNOWN	UNKNOWN	BERWICK BAY	MORGAN CITY	1
UNKNOWN	UNKNOWN	9/1/1879	GRAND LAKE	UNKNOWN	3
DANIEL BOONE	UNKNOWN	10/1/1893	GRAND LAKE	UNKNOWN	3
DOMENICA TODESCO	UNKNOWN	9/29/1915	GRAND LAKE	UNKNOWN	3
F & J	UNKNOWN	10/10/1897	GRAND LAKE	UNKNOWN	3
ONIDA	SIDEWHEEL STEAMBOAT	1/18/1850	GRAND RIVER	UNKNOWN	3
GREY EAGLE	SIDEWHEEL STEAMBOAT	12/27/1845	GRAND RIVER	UNKNOWN	3
LODI	STERNWHEEL STEAMBOAT	0/0/1915	GRAND RIVER	LITTLE GODDEL BAYOU	3
F.M. OWENS	STERNWHEEL STEAMBOAT	UNKNOWN	GRAND RIVER	PLAQUEMINES	3
G.W. ANDERSON	STERNWHEEL STEAMBOAT	8/10/1891	GRAND RIVER	UNKNOWN	3
OSCAR	UNKNOWN	0/0/1781	GULF OF MEXICO	MARSH ISLAND	3
UNKNOWN	GALLEON	9/5/1846	GULF OF MEXICO	UNKNOWN	4
NEW YORK	SIDEWHEEL STEAMBOAT	UNKNOWN	GULF OF MEXICO	MARSH ISLAND	1
UNKNOWN	UNKNOWN	UNKNOWN	GULF OF MEXICO	MARSH ISLAND	1
UNKNOWN	UNKNOWN	UNKNOWN	GULF OF MEXICO	MARSH ISLAND	1
UNKNOWN	UNKNOWN	UNKNOWN	GULF OF MEXICO	POINT AU FER	1
SWAN	UNKNOWN	4/4/1838	GULF OF MEXICO	ST. MARTIN PARISH	3
COLUMBIA	STEAMBOAT	2/27/1910	LAKE CHICOT	SIX MILE LAKE	4

1936, 1938; Knipmeyer 1956; McIntire 1958; Rehder 1971), geologists (Saucier 1963) and archaeologists (Coastal Environments 1977; Gagliano 1984; Gagliano et al. 1979; Gibson 1978, 1982; Hunter et al. 1988; Kelley et al. 2000; Pearson et al. 1989b; Weinstein and Kelley 1992; Wells 2001; Wiseman et al. 1979). The findings of these studies indicate that the great majority of human habitation sites were located on natural levees. In much of the deltaic plain they represent the only elevated landforms available. The only other landforms that rise above the generally low-lying deltaic plain are relict beach ridges, barrier islands and uplifted salt domes. These features are much less common than natural levees and therefore supported much smaller numbers of sites. The other environments found within the deltaic plain, including active and abandoned channels, swamps, marshes, lakes, bays and active beaches, served primarily as resource areas or transportation routes until the advent of technologies for elevating structures. Exploitation of these environments often took place from settlements located on nearby natural levees, but may also have involved the utilization of short-term, resource extraction sites. The latter included hunting and fishing camps, shellfishing stations, and in the historic period, lumber camps. These types of sites could be located not only on natural levees far removed from habitation sites, but also in environments unsuitable for long-term occupation.

The implication of this model for the present study is that identification of relict natural levees in the project area is critical to locating the archaeological remains of habitation sites. Resource extraction sites may be found in other environmental settings, but because of their ephemeral nature these sites will often be difficult to identify. This problem is exacerbated in the present project area by the massive amounts of sedimentation that have occurred within the last century. Because of this thick blanket of recent deposits, geomorphic maps of the area based on aerial photo interpretation or surface topography may not identify the more deeply buried natural levees. Further complicating the situation is the fact that some of the natural levee deposits, specifically those associated with lacustrine deltas that filled the lakes formerly located in the southern portion of the project area, are of such recent age that they are unlikely to contain archaeological sites greater than 50 years old.

The approach taken here has been to use the best available geomorphic mapping of the area (Smith et al. 1986) to identify the landforms present. Natural levee deposits lying outside of the area of the lacustrine deltas are shown as "Older Natural Levee" on the set of maps included with the report and are considered high probability areas for archaeological sites. Those natural levees that overlie lacustrine delta deposits, along with the other landforms, are suggested to have a lower potential for containing terrestrial archaeological sites.

The model of shipwreck occurrence used here is derived from two studies of historic navigation and shipwrecks conducted in this area by CEI. The first of these studies was an overview of waterborne commerce and shipwrecks throughout the area of the New Orleans District (Pearson et al. 1989a). The authors used historical information on navigation and records of shipwrecks to assess the probability of shipwreck occurrence by waterway and time period. They relied primarily on three criteria:

- 1) the known intensity of vessel use of a waterway as reflected in the historical record,
- 2) the quantity of known boat wrecks in a waterway as determined from the historical record, and
- 3) the known impacts which natural and human actions have had on known shipwrecks along individual waterways [Pearson et al. 1989a:277].

The authors also provided an assessment of the sensitivity of the shipwrecks likely to occur along a waterway. In their terms:

Sensitivity refers to a combination of the presumed contextual integrity of a site (based primarily on assumptions about post-depositional impacts) and the potential that the site will be impacted by ongoing or future Corps of Engineer projects [Pearson et al. 1989a:Table 6-1].

The second study was modeled largely on the first, but it focused specifically on the Lower Atchafalaya Basin and provided more detail on the present project area (Birchett et al. 2001). Several waterways not evaluated in the original study were added in the second, including Bayou Courtaleau and Bayou Sorrel. In modeling the occurrence of shipwrecks in this area the authors of the second study focused only on probability, eliminating the concept of sensitivity. Their explanation was that the latter was more difficult to objectively measure and therefore less likely to be reliable (Pearson, personal communication 2001). The assessments of shipwreck probabilities for waterways in the present project area derived from that study are presented in Table 2-4, and waterways considered to have a high probability of shipwreck occurrence are identified on the map set.

One other point should be made concerning the shipwreck data included in the present study and in the two previous studies cited above. Historical information on the location of shipwrecks is of widely varying reliability. The authors of the previous studies recognized this and included a field in the database containing an assessment of the reliability of the locational information for each shipwreck (LOCRELIAB). The following categories were recognized:

- 01 Wreck confirmed through physical verification; location is entirely reliable
- 02 Specific wreck location reported by informant, described in literature, or shown on map; good reliability
- 03 General wreck location reported by informant or literature; fair to poor reliability
- 04 Unreliable locational information or no locational information

Due to contractual requirements of the 1989 study geographic coordinates (generally UTM coordinates) were included for all shipwrecks, regardless of the reliability of the information. Unfortunately, subsequent researchers have used this information without consideration of the reliability, resulting in some potentially misleading shipwreck locations being reported. For this reason the database for the present study includes geographic

Table 2-4. Probability of Shipwreck Occurrence in the Project Area by Waterway and Temporal Period (after Birchett et al. 2001:Table 5-1).

Waterway	1718-1812	1812-1861	1861-1865	1865-1936	Post 1936
Atchafalaya Basin					
Atchafalaya River (above Morgan City)	HM	H	H	H	M
Bayou Des Glaises	M	M	M	M	M
Little Bayou Pigeon	M	M	M	L	L
Big Bayou Pigeon	H	H	H	M	L
Bayou Sorrel	H	H	H	H	L
Bayou Courtaleau	L	M	M	M	M
Bayou Fordoche	L	M	L	L	L
Flat Lake	M	M	M	M	M
Grand Lake	M	M	M	M	M
Grand River	M	M	M	M	M
Upper Grand River	H	H	H	H	M
Lake Chicot	M	M	M	M	M
Six Mile Lake	M	M	M	M	L
Wax Lake Outlet	L	L	L	L	L
Minor Waterways in the Atchafalaya Basin	L	L	L	L	L
Coastal Area					
Atchafalaya Bay	L	M	M	M	L
Bayou Boeuf	H	H	H	H	M
Bayou Shaffer	L	L	M	M	L
Berwick Bay	M	H	H	H	M
Gulf of Mexico					
Gulf of Mexico (to 3-mile limit)	M	M	M	M	11

H=High; M=Medium; L=Low

coordinates only for shipwrecks that have locational reliabilities of 01 or 02. Information on shipwrecks with locational reliabilities of 03 or 04 can still be found in the database, but no location is shown in the associated GIS.

CHAPTER 3

PROJECT IMPACTS TO CULTURAL RESOURCES

Introduction

This chapter provides a summary of the existing and anticipated human-induced impacts to cultural resources in the project area, including those related to the various features of the present project. The intent is to make project managers aware of the types of activities that may adversely affect the cultural resources located there and when to initiate the management procedures discussed in the following chapter.

Previous Impacts

Human activities over the past 150 years have had a substantial impact on the cultural resources of the project area. Beginning in 1839 clearing of the log raft at the head of the Atchafalaya River greatly increased flow from the Mississippi River into the Atchafalaya Basin. This caused the Atchafalaya River's channel to enlarge, increasing the severity of flooding in the basin and accelerating the rate of filling of the lakes in the upper and middle portions of the basin. The principal impacts of these events on cultural resources were the destruction or damage of structures, erosion of some archaeological sites and burial of many more, and encapsulation of shipwrecks in sediment. The latter process may have actually enhanced preservation of this type of site, although at the same time making it more difficult to locate them.

By far the greatest impact to cultural resources in the project area is related to the creation of the Atchafalaya Basin Floodway in the 1930s. Construction of the East and West Atchafalaya Basin Protection Levees undoubtedly destroyed a number of archaeological sites and confined the Atchafalaya's floodwaters to a much smaller area, producing dramatic increases in sedimentation within the basin. During this same period the Corps of Engineers began dredging channels for navigation and drainage within the basin. Like the levee construction, these channels destroyed an unknown number of sites and buried many more through spoil deposition in areas adjacent to the channels. The combination of rapid sedimentation and spoil deposition significantly altered the landscape of the project area. Using data from Corps of Engineer's surveys Birchett et al. (2001:28-34) estimated that a minimum of 6 ft (1.8 m) of sediment and in some places as much as 39 ft (11.9 m) of alluvium and dredge spoil accumulated between 1932 and 1963. Field observations by

Maygarden et al. (1999:83) indicate that there are approximately 20 ft (6.1 m) of spoil deposits overlying the early twentieth century Bayou Jean Louis Cemetery (16SM89). In addition to burying archaeological sites, the massive buildup of sediment has obscured features of the landscape that are a clue to the location of unrecorded sites.

Operation of the flood control structures at Old River and Morganza continues to have a significant effect on the project area. The principal impact is periodic inundation resulting in erosion of portions of the channels carrying the floodwaters and rapid sedimentation in areas outside of the channels as the flooding subsides. The effects of these processes on cultural resources have been discussed above.

Potential Impacts of the Present Project

Public Access

The public access feature of the ABFS includes the acquisition and management of approximately 50,000 acres of land within the project area. Most of the management effort is directed toward natural resources and consists of relatively low impact measures to manage forest habitat and wildlife. These should have little potential for impacting cultural resources as long as ground disturbance is relatively shallow. Of greater concern is the proposed construction of roads and trails to provide access to the area. The location of these features should be planned to avoid impacting archaeological sites directly and to limit public access to sites that could be disturbed by uncontrolled digging. The long-term effect of the latter process may be even more damaging than the disturbance caused by the road construction because the digging may be much more widespread.

Flood Control and Environmental Protection

The flood control and environmental protection features of the ABFS consist of a series of easements to be obtained over privately owned lands located within the project area. The easements include 1) developmental control easements over 338,000 acres that prohibit their conversion from existing uses or the construction of new permanently-habitable structures and require approval for the construction of other structures, such as camps; 2) environmental protection easements over the same area that prohibit the removal of certain classes of timber; and 3) flowage easements over 59,000 acres within the same area that allow their overflow by floodwaters (USACE 2000). The first two easements involve activities that could potentially impact cultural resources and ones that the Corps of Engineers will have some control over. Specifically, camp construction, which is regulated by the developmental control easement, has the potential to impact archaeological sites that are located near the surface. This impact could be direct, through construction, or indirect, by increasing access to the site and the potential for vandalism. Similarly, timber harvesting, which is partially regulated through the environmental protection easement, has the potential to impact near-surface archaeological sites.

Water Management, Canal Closure and Water Circulation

The water management, canal closure and water circulation features that are part of the ABFS project include a series of measures intended to offset the adverse effects of flood control and navigation to aquatic habitats in the basin. The types of measures involved include restricted dredging, clearing and snagging, and excavation of bank cuts. They have the potential to impact shipwrecks in the areas to be dredged and terrestrial archaeological sites in the location of the bank cuts. Because these features are few in number, the areal extent of the impacts should be limited. However, design and operational constraints on the location of the water management features may in some cases make it difficult to avoid cultural resources.

Recreational Development

The recreational development feature of the ABFS consists of 1500 acres within the project area that will be acquired by the non-federal sponsor and jointly developed by them and the Corps to provide recreational facilities such as boat launches and landings (USACE 2000). None of these areas have been identified yet, with the exception of 24 acres that will be acquired for the Atchafalaya River Landing at Simmesport, Louisiana. Like the public access feature, the recreational development feature has the potential to directly impact cultural resources located in the footprint of the proposed facilities and to indirectly affect those resources in their vicinity by exposing them to increased levels of uncontrolled digging. The areal extent of these impacts should be more limited than those related to access roads, and by planning the location of the recreational facilities with cultural resources in mind it may be possible to avoid many of the impacts.

CHAPTER 4

RECOMMENDATIONS FOR CULTURAL RESOURCES COMPLIANCE

This chapter provides recommendations for future cultural resources investigations and management procedures in order to insure compliance with federal historic preservation laws and Corps of Engineers regulations.

Priorities for Future Cultural Resources Investigations

Consultation

In compliance with the January 2001 revisions of the Section 106 regulations, the Corps of Engineers should begin consultation with the Louisiana State Historic Preservation Officer (SHPO), affected federally recognized Indian tribes, and other participants, as identified in 36 CFR 800.2, early in the project planning process to insure that a broad range of alternatives can be considered [36 CFR 800.1(c)]. Because of the complex nature of the project and the fact that effects on historic properties cannot be fully determined at this time, the agency should consider developing a Programmatic Agreement with the parties identified above concerning the long-term treatment of those properties in the project area [36 CFR 800.14(b & f)]. If project activities will occur on tribal lands and the tribe has assumed the responsibilities of the SHPO, the procedures set forth in 36 CFR 800.3(c) should be followed. However, if the tribe has not assumed those responsibilities of the SHPO, the procedures set forth in 36 CFR 800.3(d) should be followed. Consultation should also be conducted with any federally recognized Indian tribes that might attach religious or cultural significance to historic properties located in the project area [36 CFR 800.14(f)(2)]. This consultation would not duplicate that which would be undertaken as part of the development of the Programmatic Agreement.

Inventory

Section 110(a)(2)(E)(ii) of the NHPA requires agencies to "provide a process for the identification and evaluation of historic properties for listing in the National Register." ER 1130-2-540(6-2)(b) offers more specific guidance in this regard, stating that "the District Commander shall implement a program, upon availability of funds, to accomplish an inventory of historic properties and site evaluation at each civil works water resource project ..." Presently only small portions of the ABFS project area have been surveyed for cultural resources. Given the size of the project area and the thick deposits of recent sediment present

in much of the area, the process of surveying the area for cultural resources will be a long and difficult one. In order to avoid delaying the project unnecessarily, priority should be given to those portions of the ABFS fee lands that will be directly affected by features of the project scheduled first for construction. As those features are proposed for construction, an assessment should be made of their potential for impacting cultural resources and a decision made concerning the need for survey. The remaining portions of the ABFS fee property should be scheduled for survey as funds become available. In accordance with ER 1130-2-540(6-2)(b), property on which the Corps of Engineers has an easement should be surveyed if project operations are likely to affect cultural resources located there. Information should also be gathered from Indian tribes on sites that are of religious or cultural significance to them [36 CFR 800.4(a)(4)].

The methodology used in conducting cultural resources surveys within the project area will vary depending on the types of resources sought and the depths at which they are expected to occur. In general, deep subsurface testing with an auger, coring device or backhoe should be a part of all surveys for terrestrial sites due to the potential for their burial. All surveys should be preceded by a review of the best available geomorphological data from the area to be examined. If detailed data are not available for a specific area, it may be desirable to collect a few representative cores from the proposed survey area and have them analyzed by a geomorphologist before proceeding with the cultural resources survey. Although this would increase the cost of the survey, it would avoid situations where the survey methodology is not adequate to locate the resources.

Pearson et al. (1989a:298-299) and Birchett et al. (2001:161-163) present recommendations for survey methodologies focusing on shipwrecks. In general, these include 1) historical research on waterborne activities in the specific area of interest; 2) geological research on past conditions in the area and how they have changed through time; 3) fieldwork including a) a remote-sensing survey using a magnetometer, fathometer and, in some situations, side-scan sonar, and possibly b) a pedestrian bankline survey; and 4) physical examination of the remains of the ship. As noted by Birchett et al. (2001:162), some shipwrecks in the project area will be located in areas that are now on land due to the amount of recent sedimentation that has occurred. In these cases the survey methodology should be altered to include a terrestrial magnetometer survey and identification of anomalies through augering, coring or backhoe trenching.

Information on sites that are of religious or cultural significance to Indian tribes should be gathered through interviews. Due to the nature of these sites, the interviews should be sensitive to concerns about the confidentiality of the information.

Evaluation

Very few of the known cultural resources located in the project area have been evaluated in terms of their eligibility for the National Register of Historic Places. As with the inventory process, priority should be given to those resources that will be affected first by the scheduled activities. Resources on fee lands that will not be affected by project activities in the near future should be scheduled for evaluation as funds become available. However, it

should be borne in mind that allowing a resource to deteriorate through neglect is considered an adverse effect under 36 CFR 800.5(a)(2)(vi).

The methodology used in evaluating cultural resources will vary with the types of resources under consideration and their setting. Terrestrial sites that are located near the surface (less than 1 m deep) may be examined through traditional hand-excavated test units. More deeply buried sites may require the mechanical removal of sediment prior to hand excavation, or they may have to be evaluated through extensive coring. Shipwrecks may also require the mechanical removal of sediment, whether on land or underwater.

Under Section 110(a)(2)(B) of the NHPA properties that are determined to be eligible for the National Register of Historic Places must be “managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values in compliance with Section 106 of this Act ...” Whenever possible, eligible properties should be avoided by project activities that may adversely affect them. These properties should also be monitored regularly to insure that they are not being impacted by vandalism or erosion. If evidence of disturbance is found, an appropriate preservation strategy should be implemented. Such strategies might include fencing a site or structure to prevent vandalism or covering a site with clean fill and erosion control material to halt erosion.

Mitigation

Properties that are determined to be eligible for the National Register of Historic Places and that will be adversely affected by the project must have those adverse effects mitigated. Once it has been determined that the project will have an adverse effect on a historic property, the Corps of Engineers should begin consultation with the SHPO, Indian tribes that may attach religious or cultural significance to the property, and other interested parties concerning the resolution of those adverse effects. If the agency has already developed a Programmatic Agreement for the project, then this will guide the process. If there is no existing Programmatic Agreement, then a Memorandum of Agreement should be developed between the consulting parties. Because archaeological sites are the most common type of resource in the project area, mitigation will generally involve excavation to recover information from a site before it is impacted.

Data Recovery Methodology

A data recovery plan should be developed for each archaeological site that is to be excavated. The plan should include a research design that identifies a series of research topics relevant to the site, the data required to address those topics, and the methods to be used in acquiring the data. As with site evaluation, the methodology employed in conducting data recovery excavations will vary with the types of sites under consideration and their setting. Traditional hand excavation units may be used for sites within 1 or 2 m of the ground surface; however, more deeply buried sites will require mechanical removal of overburden. The high water table may also be a problem on buried sites, and shoring or dewatering may be required.

Compliance Procedures for Project Activities

Public Access

The acquisition and management of approximately 50,000 acres of land within the project area has the potential to have a beneficial effect on the cultural resources located there by protecting them from future development and erosion. The key to achieving this is to insure that the management is conducted in a way that takes cultural resources into consideration. The management aspect of the public access feature of the ABFS provides the opportunity to minimize the impact of this feature on cultural resources by avoiding known resources and surveying areas of planned road or trail construction that have a high probability for containing cultural resources. Cultural resources specialists with the Corps should be involved with the planning process, and areas that will require survey should be identified as early as possible. If significant cultural resources are located during these surveys, every effort should be made to avoid impacting them.

In addition to insuring that elements of the public access feature, such as roads and trails, do not impact cultural resources, the management of the 50,000 acres acquired for public access should include measures to prevent deterioration of cultural resources through vandalism and erosion. One of these measures should be regular monitoring of sites determined eligible for the National Register of Historic Places. If evidence of disturbance is found, appropriate preservation strategies, such as fencing or the installation of erosion control material, should be implemented.

Flood Control and Environmental Protection Easements

Camp Development

The developmental control easement, which requires approval from the Corps of Engineers prior to camp construction, should be used to reduce the impacts of camp construction on cultural resources by restricting development in the vicinity of sensitive resources. The available data are sufficient to identify some of these resources, but many of the archaeological sites have not been evaluated or their current condition is unknown. Other types of resources that might be impacted, such as sites with religious or cultural significance to Indian tribes, remain to be identified and evaluated.

Timber Management

The environmental protection easement, which prohibits the removal of certain classes of timber, does not require the approval or even notification of the Corps of Engineers prior to timber harvesting (USACE 2000). Corps of Engineers land managers will conduct periodic inspections of the easement lands to identify timber operations and assess compliance with the easement guidelines. If sensitive cultural resources are located in these areas, Corps of Engineers cultural resources specialists should also monitor the operations to assess their effect on those resources.

Water Management, Canal Closure and Water Circulation

Early planning may help avoid impacts to known cultural resources from these features, and for this reason Corps of Engineers cultural resources specialists should be involved in the initial selection of their locations. Areas to be impacted by the construction and dredging that have a high probability of containing cultural resources should be surveyed, and if possible, significant cultural resources should be avoided. However, as noted in Chapter 3, design constraints on the location of water management features may in some cases make avoidance difficult. In those cases mitigation through data recovery may be the only reasonable option.

Recreational Development

As with the previous feature, proper planning is the key to avoiding impacts to cultural resources from recreational development. Corps of Engineers cultural resources specialists should be involved in the initial selection of facility locations in order to avoid impacting known resources. Once the locations have been selected, those that possess a high probability of containing cultural resources should be surveyed. If significant cultural resources are identified, every effort should be made to avoid impacting them, directly or indirectly.

Compliance Procedures for Regulatory Activities

In addition to the above ABFS project operations, a variety of private activities will take place within the project area that will require permits from the Regulatory Branch of the Corps of Engineers. These would include permits for oil and gas exploration and production on Corps of Engineers fee lands and dredging or filling of wetlands on public or private lands. In order to insure that these activities are not in conflict with the aims of this Historic Properties Management Plan, there should be close coordination between cultural resources specialists in the Planning Division and personnel in the Regulatory Branch.

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APPENDIX

SCOPE OF WORK

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PREPARATION OF HISTORIC PROPERTIES MANAGEMENT PLAN, ATCHAFALAYA BASIN

Contract No. DACW29-97-D-0017

I. LOCATION, OBJECTIVE, PURPOSE AND AUTHORITY

1.1 Location: The study area is located within the Atchafalaya River Basin in St. Martin, St. Landry, Iberville, St. Mary and, Iberia Parishes. Attachment I (study area plans) illustrates the location of study area.

1.2 Objective: Prepare a Historic Properties Management Plan (HPMP) for above subject location. The HPMP will be comprised of those elements noted within Engineer Pamphlet 1130-2-540, dated 15 November 1996 (Attachment II). The HPMP will include both terrestrial and underwater/marine cultural resources.

1.3 Purpose: To obtain the professional services, labor, materials and equipment necessary to complete above noted objective.

1.4 Authority: The U.S. Army Corps of Engineers (COE) is obligated under the National Historic Preservation Act (NHPA), and National Environmental Policy Act (NEPA) to take into account the effect its undertakings have upon cultural resources within a given project area. Under these laws and regulations, the COE assumes responsibility for the identification and evaluation of all cultural resources within the project boundaries. In addition, the COE must afford the State Historic Preservation Officer (SHPO), and on occasion the Advisory Council on Historic Preservation (AChP), the opportunity to review and comment upon proposed undertakings and associated cultural resource investigations. Additionally, the COE is obligated under Engineer Regulation ER 1130-2-540 (Project Operations - Environmental Stewardship Operations and Maintenance Policies) to develop a HPMP for COE managed lands.

II. BACKGROUND

2.1 Proposed Federal Actions: The Supplemental Appropriations Act of 1985, Public Law 99-88, authorized the "Atchafalaya Basin Floodway System, Louisiana Project" and designated the COE as the Federal agency responsible for its implementation. The environmental goals of the basin project center around

maintaining and/or enhancing productivity of the habitat while preserving existing aesthetic values for the benefit of the public user. At present, the authorized project features include: 1) the purchase of fee interest in approximately 50,000 acres for public access; 2) the attainment of environmental protection rights for 338,000 acres; 3) the attainment of flowage and developmental control easements for 338,000 acres; 4) the development of two water management units and the implementation of future units; and 5) the purchase (simple fee title) of 1,500 acres for recreational development.

2.2 Previous Research: Past cultural resource investigations have resulted in the recording of over 150 cultural resource sites within the floodway. In 1976, Nueman and Sevello conducted a reconnaissance level survey within the floodway. Gibson (1982) and Manning (1987) surveyed protection levee right-of-ways throughout the basin. Pearson and Saltus (1989) and Castille (1990) conducted survey investigations in support of proposed channel realignments and channel training projects. In 1986 the US Army Water Experiment Station (WES) conducted a geomorphological study of the floodway (Smith, Britsch and Dunbar, 1986). The study was conducted in order to provide a geomorphological framework for subsequent cultural resource investigations. Earth Search Inc. (see Vigander and Maygarden, 1994) conducted a phase I survey in the vicinity of the Sherburne Wildlife Management Area. No cultural resource sites were recorded; however, it was determined that recent heavy alluvial deposition had obscured the historic landscape. Coastal Environments Inc. (see Birchett, Pearson and Castille, 1998) recently completed a historic navigation and shipwreck study of the project area. The information within this report will form the basis for the marine cultural resource portion of the HPMP.

III. SERVICES: The contractor shall perform all work required to provide the following services and products:

3.1 Cultural Resource Literature, and Records Review (Task I): The Contractor will conduct a comprehensive literature and records review to include the following: 1) a review of the State of Louisiana's cultural resource site and standing structure files; 2) a review of the National Register of Historic Places; 3) a review of past cultural resource reports and records; 4) a review of geomorphological data and reports; 5) a review of COE maintenance dredging logs/records and disposal areas; 6) review of COE land-use/HTRW data; and 7) review of historic maps and records.

3.2 Preparation of Base Maps (Task II): Following completion of Task I, the contractor will prepare a series of base maps at the 1:24,000 scale. The maps will be generated by CADD graphic

and/or design files in dgn or igds format and must be compatible with NOD's Intergraph system. The maps will contain the following information: 1) the location of known cultural resources sites both marine and terrestrial; 2) 18th-19th century roads; 3) historic house/building sites; 4) landings, military sites; 5) location of previous cultural resource survey investigations both terrestrial and marine; 6) geomorphic features/landforms; 7) the location of previously dredged channels and disposal areas; and 8) the location of high and low probability areas for cultural resources.

3.3 Preparation of HPMP (Task III): A draft HPMP shall be prepared following completion of Tasks I & II.

A. The HPMP shall contain, but not be limited to the following:

(1) Discussion of Atchafalaya Basin Floodway System Project and potential impacts to cultural resources from the following project features:

- a) project operations (navigation and flood control)
- b) easements for flood control and environmental protection
- c) camp development
- d) timber management
- e) recreational development
- f) oil and gas development
- g) water management units
- h) natural resource management

(2) Summary overview of regional prehistory, history and previous cultural resource investigations.

(3) Discussion of previously recorded cultural resource sites within project area.

(4) Geomorphology and environment.

(5) Predictive model of culture resource site occurrence.

(6) Marine cultural resources.

- a) previous marine cultural resource surveys
- b) past dredging activity and disturbance
- c) recorded shipwrecks
- d) high moderate and low potential areas for shipwrecks

(7) Discussion of existing and potential project impacts to known cultural resources and to areas that have potential for the presence of cultural resources.

(8) Relationship of HPMP to OMP and Master Plan.

(9) Prioritization of future cultural resource investigations, surveys, and preservation efforts.

(10) Discussion of Indian tribes with prehistoric and historic ties to project area.

(11) Discussion of Section 110 protocol and procedures for ensuring NHPA and Archeological Resource Protection Act (ARPA) compliance. Emergency activities, enforcement/vandalism, ARPA permitting, etc.

B. The draft HPMP is expected to be a polished product and accurate representation of the final report with two exceptions: 1) the draft HPMP will be double spaced and 2) photographs may be photo-copied rather than being in publishable form. HPMP style shall follow acceptable professional standards as established by American Antiquity. Upon completion, the contractor will submit 40 copies of the draft HPMP to the Contracting Officers Representative (COR).

C. Once the draft HPMP has been reviewed and accepted by the COR, a preliminary final HPMP shall be prepared. Following inspection and acceptance of the preliminary final HPMP, the final report will be prepared and 50 copies forwarded to the COR. The final HPMP shall follow the format set forth in MIL-STD-847A with the following exceptions: (1) separate, soft, durable, wrap-around covers will be used instead of self covers; (2) page size shall be 8-1/2 x 11 inches with 1-inch margins; (3) the reference format of American Antiquity will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual dated January 1973.

IV. CONTRACTING OFFICER AND CONTRACTING OFFICERS REPRESENTATIVE

4.1 The Contracting Officers Representative (COR) for this project will be Jaon Exnicios and the technical representative will be Kenneth Ashworth, CELMN-PD-RN, (504) 862-2548. The technical representative for the geomorphology portion of the study will be Louis D. Britsch (504) 862-1022. Robert LaFleur, Park Manager, Atchafalaya Basin Project Office, (337)-585-0853, will provide assistance and guidance on those portions of the plan that directly impact Operations Division and the field office.

4.2 The Contracting Officer (CO), and COR may at all reasonable times inspect or otherwise evaluate the work being performed.

All inspections and evaluations will be performed in such a manner as will not unduly delay progress of the work. It is necessary that close coordination between the contractor and Government be maintained throughout all contract periods to ensure satisfactory completion.

V. CONTRACT SCHEDULE

5.1 Contract proposal and estimate shall be submitted within 10 days of receipt of delivery order package.

5.2 The Government shall review the proposal within 10 days of receipt.

5.3 The contractor shall begin Tasks I & II no later than 15 days following award of delivery order.

5.4 The contractor shall complete Tasks I, II and III (completion of the draft HPMP) 240 days following award of the contract. Forty copies of the draft HPMP will be submitted to the COR for review. The COR will review the draft report and forward comments to the contractor 60 days following its receipt. The contractor will make the required changes and forward the pre-final HPMP's to the COR within 10 days of receipt of the review comments. The COR will inspect the pre-final HPMP and notify the contractor of its acceptance no later than 10 days following its receipt. The contractor will prepare the final HPMP and forward 50 copies to the COR within 20 days of its acceptance. A reproducible master (both hard-copy and computer diskette) and associated GIS/CAD computer data should accompany the final reports.

5.5 A brief, one page monthly progress report will be submitted along with each monthly billing voucher. The progress report will cover the billing period noted on the voucher. Each report will discuss project status, work performed, logistical problems and difficulties, if any, in meeting the contract schedule. Cost breakdowns should be grouped according to the specific "Tasks" they represent.